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Address

THE SUNSHINE AND SHADOW IN MEDICAL ENDEAVOR.*

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NEW YORK CITY.

Justice to myself, and a proper consideration for those whose faith or curiosity has prompted them to be present on this occasion, impels me to say at the outset, that I have been not a little troubled to select a topic that might suitably meet expectations and at the same time afford an excuse for my presence. I might, perhaps, *with a faint trace of propriety, lighten each* of these contingencies with the guileless claim that neither you nor I can be regarded entirely responsible for a crisis which has been *fostered for a considerable time*, and is now launched by those who are charged with the success of the occasion. However this may be, a reasonable fidelity to those who have so implicitly trusted us, should beget praiseworthy patience in you, and a degree of commendable brevity in me that befits your present comfort and the character of the topic *under consideration*.

The theme of the evening as already announced is somewhat euphonious, but quite suited, as it seemed to me, for an occasion of this kind; one healthful in all respects, *dignified by character and learning, and* adorned by beauty and grace.

In order that there may be no suspicion in the minds of any, that the *topic of our choice is intentionally* clothed in a garb of mysticism, I hasten at once to say that the *expression, "The Sunshine and Shadow"* has no hidden meaning, but is chiefly employed on this occasion to express in a metaphoric and more agreeable, but in no less *emphatic way, the well recognized results* of our profession, in the long struggle for the relief of human affliction. The glorious sunshine of medical achievements is reflected in the happy faces and glad manners of the patients and their friends, also in the gratified expression of the otherwise imperturbable demeanor of the experienced *medical attendants*.

Bereft, indeed, of healthy human sentiment are those whose hearts are not gladdened by the melodious expression, "the patient is better," "is out of danger," "is well again," *thus indicating to all concerned that* nature's forces, aided by those of genuine medical endeavor, have [illegible] yet another sufferer, thereby restoring happiness and help to loved and needy ones.

To those who thi[illegible] than their friends, and sympathize with them in their distress and forebodings, those *who have in their bosoms* thoughts of the welfare of mankind, the sunshine in medical endeavor *is seen in the results of the efforts of rescue of all men, of all climes, from physical distress,* thus adding correspondingly to the comfort and prosperity of the whole people. No financier notes with *greater care* the fluctuations in monetary affairs, nor accounts for the *variations more astutely, nor appreciates more keenly the import of the changes, than does the true physician* note and estimate the varying results of genuine medical endeavor, in the different medical centers, and in *the medical clearing houses of the civilized world. The* features of the former brighten with the gratifying sensation of the knowledge that he is the possessor of greater *wealth, and let us hope of greater determination to* aid the unfortunate and to add to the world's enhancement. The features of the latter are brightened by the sunshine of the facts, that the beneficent endeavors of his profession have robbed pain of its terrors by means of the strengthening slumber of anesthesia; have stripped infection of its dread by the power of sani*tation and asepsis, and have disarmed fata*[illegible] and distressing disfigurement by means of s[illegible]cination.

These achievements alone have added more treasure and comfort to the world than a[illegible] quests have destroyed since their time; they h[illegible] *more to a nation's financial and human assets,* [illegible] all of its victories. The bounteous achievem[illegible] physician are attained in comparative siler[illegible] unobtrusive effort as becomes his [illegible] therefore much less manifest and unde[illegible] ple than are *the achievements of statesmen* and w[illegible] riors, whose general aims and activities are only *rarely* out of sight and hearing, and whose final rewards emphasize in no uncertain *manner the confidence and* appreciation of the people. The sunshine of success*ful effort and* of appreciative response gladdens the heart of the true physician no less than it does the heart of one who achieves *beneficent triumphs* in other fields of action.

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Those who guard the security of individual existence in the cool moments of every day life exhibit quite as *great and often greater steadfast bravery than do those* whose fortitude is strengthened and whose efforts are stimulated by the fascinating din and *intoxicating allurements of battle. But enough of this feature of the* matter has been said, for were I to continue longer in this manner of expression you might be led to believe that I am partial in my views and utterances regarding *the achievements and the burdens of those of my own* profession.

As you will no doubt recall, my theme provides for *shadows as well as sunshine in medical endeavor*. The shadows in medical endeavor, like other shadows, bespeak the absence of enlivening sunshine, and *suggest* the want of the good cheer that accompanies the need of its presence, more especially in the counterfeit form of endeavor. Sunshine and shadow have antithetic attributes and attend on each other with a degree of fidelity that puts to shame the fealty of human co-operative action in tangible matters. Sentimental writers have noted this fact and utilized it in a delicious manner, as did Bovee when he sang, "False friends are like shadows, keeping close to us while we walk in the sunshine, but leaving us the instant we cross into the shade." Physicians have ample chance to mark the change from sunshine to shadow as modified by the acts and sayings of those dwarfed by the characteristics of complacency or envy. The gratifying sunshine of a conscientious physician's success is too often darkened by the distressing shadow of envy of those who find it easier to gaze into the large than into the small end of the glasses, and quite as natural, and then contend that small things and those beyond their conception or reach are too unimportant for serious thought, instead of keeping step with the comprehensive endeavor that leads the way in meritorious advance. Such persons as these clog the channels of success and are as brigands in the paths of enlightenment.

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* A popular address delivered at the meeting of the Indiana State Medical Society, 1905.

The sunshine and shadow in medical endeavor! Again the topic is repeated, so that we may better emphasize the fact that the endeavor which we are considering is no less surgical than medical. Medical endeavor includes that of surgical, since the resources of the latter are as much remedial measures of cure as are other means of relief. The proper practice of surgery is based on experience and knowledge and on hard knocks, no less than is the practice of medicine.

I wish, with the requisite degree of emphasis for the
pu register my unqualified objections and stren-
tion to the idea, wherever it may be enter-
, the surgeon is the executive agent of the
nless, unworthily, he himself so chooses to
the judgment and services of the surgeon
cessary until the physician in charge sug-
they be secured, and perhaps because of a
omplication that requires for its interpre-
y surgical experience and surgical the-
is, I am happy to say, rapidly dis-
ing, not only because of the recognized fatality that too often follows late consultations, but because of the mutual appreciation of the greater services to the patient and to the profession of prompt and early co-operative thought and action. It would be strange, indeed, at this particular time, and would be reasonably dependent on heedless thought or unpardonable vanity on my part, were I not to insist with equal emphasis on the need of co-operative action in surgical instances as well as in medical.

The shadows of popular distrust and disapproval, and those of professional displeasure and censure, sometimes appear so suddenly and become of such magnitude as to smother by their unforgiving and spiteful character all efforts of explanation in instances of fancied or real oversight, referable especially to the treatment of distinguished public personages. So frequent and inconsiderate are those manifestations in such instances that "the head that wears a crown" can not lie more uneasily than that of one of our profession who is charged with the physical welfare of a person of markedly distinguished rank. Especially is this true when, in moments of misguided confidence or of mistaken policy, matters whose importance can only be properly estimated by the family of the patient or by the medical attendants, are given public notice. Aspiring and proud souls whose ambitions prompt them to place their names highest on the rugged face of an unconquered precipice are not more foolhardy in many instances than are those of our profession who affix their names to a public bulletin bearing details that offer the opportunity for invidious chatter of envious and self-constituted critics. The soothsayer who bade Cæsar "Beware the ides of March," were he living to-day, might with equal pretension bid us beware the "ides" and ends of medical bulletins of prolific recital.

Fearing that you may suspect that I, for some reason, yet feel the smart of the public lash, I beg to inform you that I am not "a bruised reed" that has been broken, nor have I been subjected at all to the Shakespearan form of chastisement as verbally dispensed by Cleopatra; therefore no one has said, like her, "Thou shalt be whipped with wire, stew'd in brine, smarting in lingering pickle," but medical friends of mine and of yours have been thus figuratively whipped by the mischievous and overwise utterances of those to whom have been graciously given or wisely denied, facts that can be properly construed by only those at the bedside of the patient.

In a lesser degree than in the preceding examples many of us occasionally receive more than we deserve, because of expressions that thoughtlessly escape us entering at once the public ear, or entering a private ear with public predilections. Let us then cultivate the sunshine of endeavor in these respects with a due consideration for the shadows begotten in our paths by the unwise or thoughtless indulgence of others in matters beyond their willing understanding.

It is the medical endeavor of modern age that has just engrossed our attention, the sunshine and shadow of which in all of their characteristics have been the natural product of the spirit of the times, as, in essential respects, no doubt, have been the sunshine and shadow in the medical endeavor of the early history of the healing art.

The knowledge and ability of healing the afflicted is developed in accordance with the opportunity and desire to cultivate the calling; the opportunity and the desire result from the willingness to seek relief and the degree of the devotion exercised by those who aim to provide it; the willingness to seek relief is prompted by the confidence reposed by the afflicted in those whose capacity for good is measured by the honest outcome of intelligent assiduity, exercised in a proper and adequate field for the purpose.

The laity too frequently clothe those of our calling, more especially the surgeons, with romantic attire, and often seem more impressed with the agents of our craft and by our utterances than by our material presence. They watch for something startling and even measure our importance by the magnitude of the exhibit; and not all of us, I am disposed to remark make perilous efforts to dispel the illusion. I now recall a physician whose appearance and manner were, to my then youthful and unsophisticated mind, the onification of Ajax defying the lightning. One day e presence of many by-standers, this physician was asked by a patient: "How much shall I pay you for your advice, doctor?" The pseudo-Ajax, rising to the occasion and to his full height at the same time, in a loud, convincing tone replied: "An ordinary doctor would charge you two dollars. I am an extraordinary doctor and I won't charge you but two." The interest of the onlookers seemed to me to increase a hundred fold at once, and so far as I am concerned, I am not quite willing to deny that a microbe of some form of ambition did not infect me at that time. Certainly every one present on that occasion seemed to be delighted to have been a factor in so startling an announcement, and the poor patient himself parted with his hard earned money, emitting a radiant expression of wonder and satisfaction that seemed to say, "By Jupiter, an angel, or if not, an earthly paragon," and at the same time unconsciously illustrating by his appearance the sentiment of Emerson, uttered perhaps twenty-five years before: "There is a remedy for every wrong and a satisfaction for every soul!" In this instance, however, the charge made was twice the sum usually asked at that time and place for the services rendered, and which on this occasion were for the relief of an illusionary complaint. It has been many years since this incident happened but not so many since similar ones have occurred. The circumstance then illustrated and still illustrates the subtle and controlling influence exercised on the minds of those with imaginative ills, annoying to themselves and friends and perplexing to the medical attendant, of the assertive declarations made by noisy and irresponsible persons.

Patients in despair because of these afflictions, encouraged by their friends and sometimes offended by the apathy or well meant sarcasm of the medical attendant, often reluctantly seek the relief offered by exploited means of cure. Sad it is that in these cases the medical attendant too frequently expresses his satisfaction for having thus escaped the irrational besetments of the victims of imaginary disorders. Such patients as these deserve abundant sympathy and are difficult to convince against their morbid inclinations and are cured only with great effort by ordinary officinal methods. On this unfortunate class of people the human buzzards prey with persistent eagerness and gratified glee, aided by the alluring statements and false beacons hoisted into view by selfish agents for the purpose of securing the gross gains of the soulless thrift encouraged by this form of business enterprise.

In secular, sectarian and medical publications are found too frequently alluring announcements of remedial promise, and the recital of cures that can have no foundation in real fact and which, it seems to us, should be well known to those intelligent persons who assume to educate us in all things relating to the flesh and to the spirit. If these misleading statements and their deplorable outcome be not comprehended by so distinguished and earnest public servants as are these same agents of enlightenment, whose efforts in the search of knowledge and truth in the affairs of men and nations, lead them to overcome all obstacles opposing the purpose, then indeed should the duties of the editor on "serious things" be so increased as to include an essay on the fact that "nothing is more terrible than active ignorance." I beg to suggest, as an earnest of the graphic utterance of Goethe, that the essay be illuminated with the shadows of the unfortunate, and the results of misguided hope as pictured by the emaciated forms and mental wrecks strewn along the pathway of delusive medication. If there be any of these who are not ignorant of the disaster which their business instincts invite, to them the least I will say is: Dismiss your family physician at once and administer to your children and take yourselves the curative agents you exploit, and in accordance with the directions on the package.

The worst that might be said to this class of persons is not fitted for utterance at this time and place, and in this presence.

I will, in this connection, give an illustration of the sentiment "Where more is meant than meets the ear." Perhaps, however, it is better to say, than meets the eye —as might have been said had the expression been written near to this period of frenzied enterprise.

Not very long ago a loyal friend of mine whose loyalty to me could only be measured by her loyalty to a certain sectarian journal from which she had gained in spiritual consolation and comfort for many years, chanced to call my attention to the "high character," as she expressed it, of the abundantly illustrated "business columns." I naturally wishing to take note of so important a fact, at once scanned the announcements relating to its business purposes and to other undertakings. It required no special scrutiny to determine the presence of several exploitations of things that fasten the attention of those of inquiring minds and confiding natures; those who, while waiting for something to turn up of substantial character, invest their unbounded faith and limpid assets in problematical ventures; those whose failing health from incurable or imaginary afflictions have often experienced "the sickening pangs of hope deferred," and ventured their all, with no other gain than this. However, I will mention only one, "A Cure for Consumption," at so much "per" bottle. I inquired of my friend why it is that in a publication of this character, devoted to spiritual matters and bearing a title that means Christian effort and Christian outcome that such an announcement as this appears on its pages. She frankly replied, "Because I assume that their presence here inspires greater confidence and is followed by larger returns than when announced by the secular press." I earnestly inquired, "Do you believe consumption can be cured by medicine alone, and do you not believe that such medication as is here announced is quite likely to be delusive and even destructive because of its artful composition and misleading effect?" She, being the wife of a physician, and therefore more interested and better informed in such matters than many others, promptly replied, "Yes, I do, and I will call on the editor and see about it, for surely he either believes the statement to be true, or is not aware of its presence in the publication." Later I saw the lady again and inquired if she had seen the editor and what he had said. "Yes," she replied, "I saw him and he said: 'I am not responsible for the advertisements, as the business affairs of the paper are no part of my duty.'" "Well," I inquired, with a somewhat confidential, continuously curved interrogative inflection, "what are you going to do now?" "I have written him already," she replied, "that unless that deceptive consumption cure is expunged, I will stop my subscription for the paper." I wish to say, in justice to the management of the publication, that after a little time the objectionable announcement ceased to appear, but for what reason I never knew.

While writing these lines it occurred to me to examine the pages of a number of sectarian publications periodically devoted to the enlightenment and the spiritual guidance of the people. Twelve different examples were selected without reference to any consideration [illegible] than the main object in view—the ascertaining of the presence or absence in the paper of the alluring recitals to the unfortunate afflicted already mentioned. The pages of the great majority of these publications were above reproach. The pages of a small minority of them were a sad commentary on sincere religious pretension and honest business enterprise. On a page of one appeared a sensible article illustrative of the fact that "Where there is prayer there is peace." On another page of the same publication was conspicuously announced, "The curing of cancer without the use of the knife," followed by "If you are seeking a cure come here and you will get it." In another instance was noted a three-quarter page announcement in which a list of not less than forty diseased conditions appeared, along with the assurance that in any stage of any of those diseases "The results are so certain" that gladly an absolute guarantee will be sent to any inquiring patient. The exact meaning of this phraseology is somwhat dim and is open to diverse conjecture; but that the intent is obvious and the outcome is remunerative is told by the liberal area of the space devoted to the purposes of the announcement. Among the diseases in the list were croup and Bright's disease, piles and cancer, constipation and tuberculosis, dandruff and women's diseases, along with the alluring bait, "A fifty-cent bottle free."

We all are more or less familiar with, and gladly welcome the happy inspiration that conceived the idea of tasteless, of agreeable, and of sugar-coated medication, but are we familiar with and do we approve of medication that has for its vital inspiration the misguided faith begotten by sanctimonious business enterprise?

One other instance of this nature and I am through with examples of these special shadows. In a local paper of a town and not in the list of the regular advertisements, but in a conspicuous place in the reading matter and therefore of a conspicuous price, is announced "A new cure for cancer," fortified with a certificate from a far distant state of a man who had a cancer of the lip that "seemed incurable," and "is now perfectly well." This medical agent is also guaranteed to cure cuts and burns—price twenty-five cents. I do not contend that this compound if applied to cancer will cause local harm, but surely it will not effect a cure and probably as surely will contribute to final disaster by delay of proper means of treatment, and possibly will rob the patient of established methods of benefit while chasing the delusive phantoms of hope, incited by the agents of thoughtless or of mercenary gain. The columns of many of the lay journals of the country are disgustingly disfigured with a humiliating class of notices, notices that filch from the helpless and unsophisticated their hard earned and much needed money, giving in return but renewed disappointment and often final disaster.

This form of filching is supplemented, in some instances, by one of far lower degree, whose slimy bids for trade exact a tax on the most unfortunate of the unfortunate class that abides with us. Neither the sunshine of medical endeavor nor even that of Christian endeavor has as yet uprooted, nor more than lessened the presence in conspicuous places of the beguiling hand-bills of thesse audacious vipers. Surely the failure of the efforts in accomplishing so righteous a purpose casts a fixed and almost impenetrable shadow, demomative of the frailty of beneficent human endeavor matters in the correction of such insatiable evils. The remedy for these conditions lies in the development of such a degree of moral determination on the part of all as will secure the enactment of corrective legislation and the development of an abiding courage sufficient to cause enforcement of the legal commands. I am disposed to believe that the wise and emphatic utterances of President Cleveland regarding such matters on the occasion of the semi-centennial celebration of the New York Academy of Medicine in January, 1897, can well be quoted at this time as an earnest of the opinions of all thoughtful, considerate and patriotic citizens. He said:

> You have established a code of ethics which condemns charlatanism in all of its forms, and yet ignorant pretenders roam over the land offering to perform miracles, or are located in our towns and cities preying on the weakness of the sick and afflicted, while men and women are allowed to die without medical attendance, deluded with the hope that faith will save them in their last extremity. Within the limits of your professional power and influence you seek to restrain any approach to criminal malpractice, yet newspapers disgustingly, though covertly, advertise the way to such crimes and startle their readers with sensational tales of death and misery to which they are directly accessory. I need not suggest that such evils are allowed to exist by reason of the insufficiency of our laws or the laxity in their execution. I have intimated that for this condition you are not responsible in a professional sense; but are you sure that as citizens you are doing all in your power to remedy the situation?

The potency of these remarks is the product of the careful thought and acute observation of a distinguished citizen whose fearless loyalty to the public interests has frequently been demonstrated in no uncertain manner.

I am fittingly reminded at this time by the sacred lessons of the greatest of all teachers, that "He that is without sin let him first cast a stone." Also, "And why beholdest thou the mote that is in thy brother's eye, but perceivest not the beam that is in thine own eye? How canst thou say to thy brother, Brother, let me pull out the mote that is in thine eye, when thou thyself beholdest not the beam that is in thine own eye?" No one is more aware than am I of the number and the magnitude of the motes and the beams in the eyes of those who profit by the unethical policy of medical journalism. No one is more aware than am I that until quite recently, the casting of a stone in any direction of the compass exposed to justifiable hazard the metaphoric eye of an offending medical journal, and possibly of a noted practitioner. The failure to recognize the essential differences between thrifty commercialism and ethical proprieties has been a blighting reproach on the ethical pretensions of our profession, subjecting us to biting jests and humiliating scorn painful to bear and difficult to gainsay. But I am gratified to be able to announce that an apparent era of consistency in this respect is at hand, and is rapidly increasing in all directions, embracing alike the personnel and the press of our profession. Let us, therefore, congratulate ourselves for ourselves because the rising sunshine of professional consistency is now dispelling the gloomy shadows of professional inconsistency that have too long darkened the path of consistent medical thought and action.

The construction of even a very brief retrospective review of the birth and past attainments of our profession requires abundant leisure, infinite patience and unrestricted access to almost numberless records representative of all nations, and of all ages, in order correctly to understand the earliest periods of medicine and surgery and the sequence of their logical development. We can do no more on this occasion than to touch lightly here and there at long distances apart along the pathway of advance, thereby fitting us the better to appreciate the full significance of modern medical triumphs as demonstrated through the effulgent sunshine in medical endeavor. The beginning of medical thought and action is so obscure and so intimately associated with the strange conceits and fantastic beliefs of early recorded time as to make impossible the fixing of a period of commencement in established medical endeavor. Medical thought and action at that time were a part of the imaginative features of early human existence, when superstition and false philosophy dominated the actions and beliefs of men. In ancient times, the physician of a locality was its magician and conversely, as sometimes happens now in pagan and aboriginal countries. The art of healing was then regarded as most mysterious and its agents were believed to be in communion with spirits. Amulets were worn to chase away the ague, extracts from the Iliad to lessen the suffering of gout, and a verse from Lamentations for cure of rheumatism.

But do not, my friends, pity too soon these ignorant people, nor indicate by signs a doubt regarding their mental equilibrium, for neither you nor I know how many here this evening pin their faiths of cure or prevention of rheumatism to a well-worn horse chestnut deposited in the left-hand trousers pocket; nor how many experience relief from insoles made of mullen leaves; nor how many are benefited by brass rings worn on a special finger or toe, which ring extracts the virus of disease, as is asserted to be proved by the presence on the ring, from time to time, of the products of oxidation, and, pardon me if I suggest, of careless personal sanitation. Lessing truly said, "The superstition in which we were brought up never loses its power over us, even after we understand it."

An ordinary scrutiny of the advertising columns of the secular press to-day will furnish exhibitions of the perverse ingenuity of man, affording him ample subsistence because of the presence now of receptive beliefs like those of the earliest times.

The prescriptions of early times are a caution to modern pharmacy. Galen and Avicenna secured greater professional repute as successful physicians than is possible in our period, and, were their famous prescriptions to be given now, it seems quite certain that more patients would succumb than receive benefit from their use. Yet in their time these prescriptions were employed with seemingly marvelous success. Do these facts suggest an absence of stability of medication, or only the presence of its fallacies?

In the second edition of a small book published in 1692, denominated the "Choice of Remedies," is found this prescription for "Convulsive Fits" and "Hysterical Vapors:" "Take the liver of a hare (if it have been hunted it may be better) and hang it up in a dry place till it is somewhat friable, having a care that it is not putrific; of this reduced to powder let the patient take two or three scruples at a time, in any convenient vehicle." Also we find another for cure for cancer of the breast: "Take the warts that grow on the hinder legs of a horse, dry them gently till you can reduce them to powder, of which you may give half a dram for a dose in any convenient vehicle." This latter agent had the merit of doing no local harm, even though it could be of no special good.

In this connection, I am reminded of the fact that in my early youth a fond and solicitous domestic gave me freely of grated dried pumpkin stem and molasses for the cure of colic. Whether or not the sweetened sunshine of the molasses or the insipid shadow of the pumpkin stem or the implicit faith entertained in the curative virtue of the remedy or, perhaps, only old-fashioned homely coincidence afforded the relief in this instance of medical endeavor, I am not prepared to say.

On closer examination of this little book on "Choice of Remedies," one is forced to the conviction that, indeed, much sunshine should have followed medical endeavor when attended by the dark shadows of such sickening therapy, the proper vehicle for which I am disposed to say should be the ash cart of a modern city. It should not be overlooked, however, that they did then, as we do now, the very best they knew.

The recorded growth of surgery began 3,000 years ago, and the tangible evidences of surgical endeavor antedate this period an unknown length of time. Fossil examples of prehistoric trephining done some time during the polished stone age may be cited as examples of this fact. About 1,550 years before the birth of Christ was made the following record regarding a tumor: "If this tumor goes and comes under your finger, trembling even when your hand is still, say it is a fatty tumor and treat it with the knife, after which treat it as an open wound. A work on anatomy (a true foundation of safe surgical endeavor) was in existence about 5,240 years before the birth of Christ. The Old Testament contains expressions relating to medicine and surgery. And we find, at that time, an expression that has come down to us with a pungent flavor not greatly attenuated, though highly seasoned with the smart sarcasm of the day. King Asa, "In his disease sought not to the Lord, but to the physicians." And, "Asa slept with his Fathers!" In Exodus is found this statement: "And if men strive together and one smite another with a stone, . . . then shall he that smote him . . . pay for the loss of his time and shall cause him to be thoroughly healed." or, when practically rendered, shall pay the surgeon his fees.

About 1,000 years before Christ, Homer in his songs described the wounds of the conflicts of that period and the method of their treatment, which in some respects may be regarded as rational for the present time. In the fifth and sixth centuries before Christ, numerous temples erected to Æsculapius, the father of medicine, were extant, to which the afflicted resorted for relief, suggestive of the dispensaries of to-day. At these places, certain medical families, having presumptively special medical endowments, dwelt and treated the complaints of the callers, not in accordance with any established dogmas, but in accordance with their own individual conceptions of the means best suited for medical and surgical relief. It is likely that each individual family had its own records of remedies, of methods and of results, which were transmitted from father to son, just as one now finds in a good old-fashioned family "grandmother's recipe for cake" or for colic. And, also, perhaps, not unlike the self-constituted doctor of our day, who prescribed corn beef and cabbage for a blacksmith suffering with cramps, with instant relief, and so recorded the fact. Later, however, a minister thus afflicted called him in and was given the same treatment but promptly died. Whereof this unprejudiced rec[illegible] of facts made the following entry in his record of endeavors: "Corn beef and cabbage is good for a blacksmith with cramps, but ain't worth a d—n for cramps in a minister."

Hippocrates, the father of medicine, born 460 years before Christ, was the offspring of a direct family of medical practitioners. Prior to his time medicine and surgery were but little advanced, and a distinct line of demarcation had not been drawn between them. Dr. Hippocrates, like some doctors of divinity, had great faith in the efficiency of fire as a remedy. The maxim of Hippocrates that "the diseases which are not cured by medicine are cured by iron; those not cured by iron are cured by fire, and those not cured by fire are incurable," was the cause of great suffering and of bad surgery—and theology—up to nearly the present century. Hippocrates and his students were prolific writers on surgical topics. They wrote on injuries of the head, on fractures and dislocations and sympathetic fevers, and many of their statements are to-day a part of the structure of modern established surgery. Thus it appears that the wise men of that period were able to establish enduring truths in medicine and surgery of significant modern importance, and, too, without the aid of the special means of analysis that characterize the bountiful period in which we live.

It may not be amiss to observe in this connection that the powers of human reasoning in diagnostic attainments are developed in direct proportion to the paucity of other means than this of reaching final conclusions in the field of differential endeavor. Conversely, inductive diagnostic attainment, if not carefully fostered, will be disabled by the vigorous assaults made on reasoning effort by use of the novel expedients employed in diagnostic aims; not necessarily because of the abundance of expedients, nor of their presence, but because it is human to accomplish a perplexing desire with as little effort as possible. The scant danger that now attends "explorative incision" is apt to encourage a degree of mental contentment, inhibiting the reasoning powers, so as to be followed, after brief and unconvincing effort, by the expression, "Oh! well, an explorative incision will settle it."

Let us now turn to a more pleasing picture, illustrative of the sunshine and shadow in medical endeavor as demonstrated by the direct results of professional effort in the alleviation and cure of preventable human affliction, during many years of toil of those of our calling. It is well to be reminded here that of one million human beings born a hundred years ago only about three hundred are now living, and they are living but feebly, cheered by the recollections of the past.

In this connection, you should be told that, during the last hundred years, the expectation of life has been remarkably advanced. The ubiquitous "King of Shadows" has been moved many more paces to the rear of the "shining marks" that he so much loves to demolish. The expectation of life in New York City in 1886, says Dr. Biggs, was only a little more than twenty-five years, while in 1903 (17 years after) for the same period the expectancy had nearly doubled, equaling quite forty-one years, and constituting an equivalent in the saving of life in that city of 28,000 lives annually. In the seventeenth and eighteenth centuries, according to Dr. Biggs, the average death rate of the civilized world was about 50 per 1,000. In London, from 1628 to 1635 (in the absence of pestilence), the average death rate was 50 per coo, and the absolute mortality there for twenty-four mol 1620-1643) was over 70 per 1,000.
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So much for shadow in medical endeavor. Now mark the sunshine. In London, in 1902, the death rate was but a fraction over 17 per 1,000. In London, from 1771 to 1780, 5 per 1,000 died of smallpox; in 1880, 2 in 1,000; in 1837, 1 in 12,500; in recent years the death rate per 1,000 from smallpox in London is expressed by an insignificant decimal.

In 1888, in the Department of Health of New York City, the initiative in the present war against tuberculosis in this country was begun. Then and for some time following, the idea was regarded by distinguished members of the medical profession of the city as being meddlesome, puerile and demoralizing and doomed to prompt and inglorious defeat. At that time the medical commissioner of the Department of Health of that city addressed to each of twenty-five of the leading physicians of the city a letter inquiring if, in their opinion, the time had not come when tuberculosis should be regarded as a communicable disease and measures be taken to combat it, based on the reporting to the Department of Health by the medical profession of the cases of this disease coming under their care. From the great majority of the twenty-five thus addressed no reply whatever has yet been received. From the small minority halting replies of the "Yes, I guess not" type came to hand and to ear. But two only of the twenty-five responded promptly and in the affirmative. Physicians of lesser rank than those already mentioned amused themselves and others of high attainment and doubting method by means of cheap writings and sayings that prompted mirthful comments on the part of those with no faith and little desire to aid in the undertaking. Since that time (1888), however, the cause has made rapid progress, and physicians who then deprecated the attempt are now convinced of its wisdom and are using the weight of their eloquence and standing to secure sufficient monetary support from the city and from citizens to provide for the care and relief of the minority host of this class of sufferers. The rewards of effort thus far gained can be no better related than by Dr. H. M. Biggs, who has been among the foremost in aggressive action and suggestion of those who have engaged in the conflict against tuberculosis. Says Dr. Biggs:

> The average death rate in the Boroughs of Manhattan and the Bronx from all tuberculous diseases for the five-year period preceding 1888 was 4.35 per 1,000 of the population and for the five-year period preceding Jan. 1, 1905, was 2.83, the decrease exceeding 35 per cent.; or, going a little farther back, in 1881, the rate was 4.92, and twenty years later, in 1902, it was 2.63, or a decrease comprising only these two years of 45 per cent. Translated into lives, the difference in the rates for the five-year periods, computed on the present population of Greater New York, means a decrease in the annual deaths from tuberculous diseases of over 5,500 in the greater city.

Nor is this but a little, my friends, of what has been accomplished in life saving during the average age of those within this inclosure. Surgeons who labored in the hospital wards before the days of antisepsis and asepsis will recall the abundant harvest of lives and limbs gathered in by the almost omnipresent and ever-strenuous and unrecognized agents of infection. It requires no effort of mine to recall that, while as interne in Bellevue Hospital, the presence there of pyemia, septicemia, erysipelas and puerperal fever often halted the surgeon's best efforts of relief and forbade him to employ the most approved means of operative cure under the risk of increasing the death rate of the hospital. T believe that you will indulge me if I cast on this picture of unavoidable woe the resplendent sunshine of a little of the present outcome in preventive medical endeavor.

During the last twenty-five years it has been my honor and duty to be a visiting surgeon at Bellevue Hospital, a hospital devoted to the care of the unfortunate poor of the city, those whose habits and associations, in a large proportion of cases, do not fit them for the endurance incident to disease and injury. Yet, during this time, in Bellevue, plus eighteen additional years in St. Vincent's Hospital, largely devoted to the same class of patients, I have not met with as many cases of infective diseases of preantiseptic type as came under my notice in a month's time as a hospital interne before that period. And in this connection I desire to say that each of these hospitals was as successful in treatment as were any before that dark period, and since that time are unexcelled by none devoted to the same class of cases. I can say, without fear of gainsay, that hopeless cases of injury and disease for which no practical relief could be afforded before antisepsis and asepsis are now, as the result of the practical application of these remarkable agencies, rescued in large percentages (10 to 90) by the means of established operative endeavor—and so it is everywhere. Please remember in this connection, however, that the astonishing differences in these results is the consequence of increased knowledge and not of greater assiduity nor of more thoughtful care.

Enough has been said to emphasize decidedly the glorious results in medical endeavor—of preventive medical endeavor—of the last century and a half. The brilliant sunshine of the outcome in this endeavor mingling with its unshed tears would fashion a resplendent bow of promise gloriously betokening God's choicest gifts to man.

Vaccination, anesthesia, antisepsis and asepsis, antitoxin, the *x*-ray, the discovery of the tubercle bacilli and of the kinship between the mosquito and the yellow fever plague of commerce, and of malarial torments, are among the most potent and far-reaching beams of sunshine in medical endeavor, and which are constantly increasing in their brilliancy and beneficent power, adding comforts and life to the inhabitants of the world, and lessening correspondingly the tears and sorrows of the earth that cast a sunless shadow on all of life's endeavors.

Original Articles

THE CORRECTION OF EXOPHORIA BY DEVELOPMENT OF THE INTERNI.*

W. H. ROBERTS, M.D.,
PASADENA, CAL.

There are sins of omission as well as sins of commission in every profession. Oculists are guilty of the former when they treat asthenopic symptoms as though all were accommodative and none muscular. This paper does not aim at bringing out anything new in the way of diagnosis, or treatment, but simply recommends the necessity of determining the muscle balance in all refraction cases, and emphasizes a known and tried method of relieving the vast majority of cases in which exophoria exists. This subject has been impressed on me by seeing numerous cases that have passed through the hands of competent oculists, wearing glasses practically correct, with asthenopic symptoms unabated because of an unsought for and unrelieved exophoria.

I wish also to sound a note of warning against the indiscriminate performance of the various tenotomies, with or without advancements, wherever imbalance is found. While not opposed to operative measures when indicated, I believe they should only be performed when the lack of balance can not be cured or relieved by other measures, and then only by men who are so situated as to be in constant practice. I firmly believe that more eyes are injured than benefited when the muscles are cut by any but oculists of large experience, living in the larger cities and having sufficient clinical facilities for keeping well up in this class of operative work.

Orthophoria is an ideal condition of perfect balance, or equilibrium, of the external ocular muscles, in which the tendency of the visual axes is toward parallelism.

It is rather infrequent, however, that we find orthophoria, generally a slight esophoria being associated with our hypermetropic patients, and in our myopic, a slight exophoria. Most authorities are agreed that from one to two degrees of esophoria will enable the eyes to be used for near with greater comfort, owing to the slight excess of convergence, than will a condition of orthophoria. Slight degrees of exophoria in strong, robust patients may not produce symptoms of eye strain.

Exophoria, when seen in connection with its concomitant myopia, gives the least symptoms, since fewer demands are made on the adductors in this disease than in hypermetropia.

It is not the intention of this paper to go into the causes of exophoria or to take up the subject of muscle balance in an exhaustive manner, but to recognize the fact that in many of our patients a troublesome exophoria exists, and to report some cases to show that the condition can be entirely overcome, or relieved, by muscle exercise. No originality of method is claimed. We merely desire by showing results to encourage others to adopt this simple method of affording relief to a disturbing symptom.

A routine examination of the muscle balance should be made in every case refracted. It is not absolutely necessary to measure the degree of adduction or abduction, or of supraduction or infraduction. With the Maddox rod and the small point of light at six meters the balance for distance can be quickly determined, with sufficient accuracy for all practical purposes. In those cases where the Maddox rod test shows no exophoria for distance, and the glasses prescribed do not relieve all the asthenopic symptoms, it is well to make use of von Graefe's equilibrium test for the working distance, for frequently deficient convergence for 30 cm. will be found. If no attention is paid to the exophoria, either as regards the strength of the spherical portion of the lens ordered to correct the ametropia, or to the development of the weak interni, we shall fail to give the vast majority of our exophoria patients the relief they should have at our hands.

It is very essential that all refractive errors should be *carefully measured*, generally under a mydriatic, in patients under 45, for many cases of exophoria are undoubtedly produced, or at any rate, greatly aggravated, by an improper correction. In errors of refraction associated with hypermetropia the amount of the plus sphere must be very considerably reduced, or omitted, when exophoria is present, as such incentive to convergence as slight amounts of uncorrected hyper-

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[*] Read in the Section on Ophthalmology of the American Medical Association, at the Fifty-sixth Annual Session, July, 1905.

tropia give, are of aid in overcoming the exophoria. If myopia be present in connection with exophoria, a full correction of the myopia should be prescribed.

The general health should be considered and brought as near to normal as possible. The use of the eyes for close work should be restricted and out-of-door exercise advised. Dr. de Schweinitz recommends increasing doses of nux vomica, beginning with fifteen drops three times daily and running up to as high a dose as the patient will stand.

The method I use for developing the adductors consists of exercises at home, reinforced by regular visits to the office for supervision and additional exercise.

EXERCISES AT THE OFFICE.

Generally the proper ametropic correction is placed before the patient's eyes in a carefully centered trial frame and the attention directed to the point of light (or candle) six meters distant. Weak prisms, bases out, are put in the trial frame and the strength rapidly increased until the patient has difficulty in keeping the point of light (or candle) single. He is then told to close his eyes, slightly stronger prisms are inserted and on opening the eyes he looks at an ivory ruler held twelve to fourteen inches from his eyes, my body shutting off the point of light which is across the room. Telling him to look intently at the ruler I slowly back off towards the light and when I reach it I step aside and his gaze is quickly transferred to the point of light which is now usually single. If it is double I use weaker prisms until he can readily fuse the image and then gradually increase the strength. When the light is single after transferring his gaze from the ruler, I have the patient look steadfastly at it for a few seconds, then close his eyes for two or three seconds and if on opening them he can compel the lights to fuse, stronger prisms are placed in the trial frame. The rapidity with which the strength of the prisms can be increased, and the total to be overcome, must be determined for each case. Usually I add one or two degrees each time I walk across the room, until twenty-five or thirty degrees are overcome readily. It is not often necessary to overcome more than thirty or thirty-five degrees, but occasionally I run up to fifty. In all this work it is essential to stop short of actual fatigue of the external muscles, or no true development will occur. After the exercise the patient should sit a few moments with the eyes closed until they have somewhat recovered from the excessive convergence.

EXERCISES AT HOME.

The patient is given a pair of eight or ten degree prisms, mounted bases out, in a properly fitting straight temple spectacle frame, to be worn with or without the distance correction, as may be deemed best in each case. He is then carefully instructed in the use of the prisms as follows: To use the longest room or hall available, six meters or more being desirable. Then with the prisms properly adjusted before the eyes, to keep them closed until a lighted candle is brought in front of the eyes and twelve or fourteen inches distant. If the patient has some one to assist him with the work, the candle is then slowly carried across the room. If alone the patient slowly backs away from it, keeping the eyes and mind strictly on the light. After getting across the room the eyes are closed until the candle is carried back to the starting point, or if exercising alone the prisms are removed and not replaced until ready to mount on another pilgrimage. This procedure should be repeated until the light can be at once fused at six meters distance. In the beginning these home exercises should be gone through with morning and evening, the time occupied being about ten minutes. As the muscles strengthen, once daily will suffice. It may be necessary to increase the strength of the home prisms several times, depending on the results obtained. The exercises must be persisted in until the Maddox rod will show from one-half to two degrees of esophoria for distance, and the von Graefe test shows orthophoria for near. It is well to tell the patient at the outset that it will probably be necessary to keep up a moderate degree of exercise for an indefinite period after the methodical exercises are discontinued. If the athlete stops all training after his muscles are thoroughly developed, they will gradually lose their tone. So with the developed adductors; if all prism or converging exercises are stopped, some exophoria may again show itself, therefore it will be well to use the prisms for a minute or two daily, or the thumb exercise will do.

The following cases are reported to show what good results may be obtained by the methods just outlined:

Case 1.—E. G., male, aged 32, architect. This patient was referred to me through Dr. Geo. M. Gould of Philadelphia, and came under my care Dec. 18, 1903. For two years he had been unable to work at his profession owing to inability to use his eyes for close work. For a while he was a nervous wreck—which condition he ascribes entirely to his eyes—and was under Dr. S. Weir Mitchell's care. Dr. Mitchell sent him to an oculist, who prescribed O. D. + sph. 1.25, O. S. + sph. 1.00, which gave him no relief whatever. For some months he had been living a strictly out-of-door life, sleeping in a tent, hoping that his eyes would tone up and that the insomnia from which he suffered would disappear. He was greatly discouraged, and as he told me afterward, he would have gone back east forthwith had it not been for the fact that he could not look at the time table long enough to see what train he should take. He disliked to ask anyone for fear he should have to explain about his eyes. His examination showed O. D. V. 6/5 ??, O. S. V. 6/5 ??, 3° exophoria at 6 meters, 2° exophoria at 30 c.m.; adduction 10, abduction 9.

After careful mydriatic refraction I ordered, O. D. + sph. 0.50 ⊃ + cyl. 0.37 ax. 45 = 6/4, O. S. + sph. 0.50 ⊃ + cyl. 0.50 ax. 20 = 6/4.

He was given prism exercises at the office, supplemented by work at home with a pair of 8 degree prisms which were later increased to 12 degrees. By February he had ¾ degree exophoria for distance, and orthophoria for near. In March he had a slight esophoria for distance. He returned to active work in his profession in April, keeping up moderate exercise with his prisms. In May he had from 3 to 6 esophoria. When last seen in March of this year he reported his eyes perfectly comfortable. Adduction was 28 and abduction 9.

Case 2.—R. H., school girl, aged 16, complained of frontal headache, which came on only after use of eyes. O. D. V. 6/6 ??, O. S. V. 6/6 ??, 3° exophoria at 6 meters, 8° exophoria at 30 c.m.

Under a mydriatic no astigmatism could be found, either at trial case or by the retinoscope, only a slight hypermetropia, and this was not prescribed for. She was given the exercises at home, and at the office, and in just one month she had orthophoria. From that time on she was entirely free from headache.

Case 3.—Mrs. G. B. H. had been repeatedly refracted by one of the best oculists in Los Angeles, without any relief from her asthenopic symptoms. The glasses she was wearing were practically a full correction of her compound hypermetropic astigmatism. She showed 3 degrees of exophoria. I cut down materially the spherical portion of her lens, made a slight change in the cylinders and commenced muscle gymnastics. Her relief was prompt. On her return to her

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home in the east, three months after I examined her, her eyes were more comfortable than they had been for years. Until she came to me her muscle balance had never been tested.

CASE 4.—Miss E. F. A., aged 37, passed through the hands of the same oculist as Case 3 and with like results. She was unable to use her eyes with any comfort. Her lenses were practically correct, but she had 4½ degrees of exophoria, which had been entirely overlooked. Rest of her eyes from all close work for a time and moderate gymnastics worked wonders. In a little more than a month all her exophoria disappeared. In a short time more she had a slight esophoria and now she can use her eyes in moderation without any ill effects.

CASE 5.—T. G., school girl, aged 18. Asthenopic symptoms were unrelieved by the lenses she had been wearing for over a year, which were practically her full mydriatic correction. She showed 2 to 3 degrees of exophoria for both distance and near. I reduced the spherical portion of lenses each — 0.50 and prescribed prism exercises, with complete relief.

CASE 6.—Mrs. A. S. L., aged 50, wife of a physician, was wearing from one of the best oculists in the country, for reading, each eye, + sph. 1.50 ⊂ 3° prism base in. Her eyes were such that she could not read at all without diplopia. She showed 8 degrees exophoria for distance and 12 degrees for near. I was very doubtful in my prognosis of this case and rather advised a tenotomy, as her abduction was 12 degrees and adduction almost nothing. I made her rest her eyes, however, and gave here the exercises with astonishing results. She soon had an adduction of 33 degrees. With suitable correction, omitting the prisms, she is now able to use her eyes with comfort.

CASE 7.—Miss J. L., aged 23, came to me March 27, 1905, wearing a pair of 1 degree prisms, bases in, complaining of inability to use her eyes at all. Her vision was normal, adduction 14, abduction 9, 2½ degrees exophoria. I took off her prisms, started her on the exercises, and in two weeks her eyes were feeling much better. I did not see her again till June 27. She then had orthophoria for distance and near, adduction 30, abduction 9. She reported that she could use her eyes, all she wished, without discomfort.

CASE 8.—N. S. M., student, aged 18, consulted Dr. William Campbell Posey, Philadelphia, last fall, for sudden loss of vision in his left eye. Dr. Posey found a large lymph extravasation apparently from the superior temporal vein. Vision 2/60.

The young man had been indulging in sea bathing with great frequency. For some time he had had a thick discharge from his nostrils, evidence of some sinus involvement, and had been in the habit of sniffing the sea water through his nostrils. Dr. Posey made a diagnosis of thrombosis of the temporal vein, following a sphenoiditis, contracted by swimming. Dr. Posey put the young man on large doses of salicylate of soda. Active diaphoresis by hot air baths and pilocarpin was ordered every other day. In two months vision was normal. He then came to California and on May 10 consulted me. He had been studying hard for his Princeton examinations and his eyes felt strained and weak. He was greatly worried for fear he had injured his left eye by overuse. He was wearing weak sphero-cylinders, adduction 14, abduction 6, 1½ degrees exophoria. The ophthalmoscope showed evidences of an old chorioretinitis above the disc and in the foveal region, but not involving the macula. I made slight changes in the axes of his cylinders and ordered prism exercises. Improvement was immediate. After a short rest he was able to resume his studies with a tutor. By the middle of June he took his examinations without any evidences of eye strain. On June 26 he had 1½ degree esophoria, adduction 30, abduction 6.

I could give the histories of many more cases, but I think it unnecessary. The ones reported are fair examples of cases I meet every day. You will notice that of these eight cases two were emmetropic, and three were wearing lenses that practically corrected their refractive error but did not take into account the muscular defect.

I think the results obtained in these cases justify me in my enthusiasm for prism exercises and should reflect great credit on the originators.

DISCUSSION.

DR. G. C. SAVAGE, Nashville, pictured two ciliary muscles on the blackboard, and two internal recti; also two brain centers, one controlling the ciliary muscles and the other the interni (functionally). He said that there are two centers at the base of the brain, each of which is connected with two muscles, the ciliary and the interni. The centers of convergence and accommodation, he said, are so intimately related that one can not act without the other. The center of convergence, he assumed, is the third, and the center of accommodation the tenth, and asked what establishes the intimate relationship between the two. For every nerve impulse sent by the tenth center there is a corresponding nerve impulse sent to the two interni for convergence. Now, if there be orthophoria for distance and the tonicity of the ciliary and interni is normal, there can be no exophoria for near, for every time the ciliary muscle undergoes contraction the interni will also undergo the necessary contraction to converge to the object. Orthophoria for distance and esophoria for near is the normal condition. There is proper relationship as to tonicity between the ciliary muscles and the interni. Nature, he said, has placed in every brain centers for the correction of muscle errors. These centers are not the volitional centers; they are not in the cortex of the brain, but there is an individual center for every muscle connected with every eye for the correction of every condition that would cause diplopia. These centers, he believes, are in the base of the brain. There is the third basal center on one side and the third on the other. Volution has no influence over these basal centers, but influences the cortical centers only. In the proper test for heterophoria the basal centers are thrown off their guard and do nothing. He said that the Maddox rod does not offer a correct test for heterophoria, and said that the remedy is to increase the tonicity of the interni and that no operation is necessary. The muscles are to be exercised. Accommodation is strong, but convergence is weak; therefore, prism exercises are needed. That does not disturb the third center, but excites to activity the basal centers and they throw into a state of contraction the interni, and if such exercise is allowed to alternate with rest the patient will be cured.

DR. F. B. EATON, San Francisco, preferred to look at the subject from a clinical point of view. Eleven years ago, he read before this section a paper on the physiology of the ocular muscles, especially those of convergence, and he said that he has learned something in the eleven years that have followed. While Dr. Savage's demonstration from a theoretical point of view is impressive and experience will bear him out, yet he thinks the great error is not giving attention to the directions given last year by Dr. Ramsay, to build up the vitality of these patients. Dr. Eaton can overcome any amount of prisms and can converge one eye without the other, but he has exophoria for nearly 14 degrees. While this may be due to some disturbance of the vertical ocular muscles, his experience is that as the physician builds the patient up in a common sense way, he cures these muscle conditions. Otherwise it does not make any difference how much exercise is given them. Dr. Eaton thinks the condition is a neurotic one.

DR. DUDLEY S. REYNOLDS, Louisville, stated that he has seen many cases of heterophoria subjected to tenotomies, after Dr. Stevens' suggestion, and to a great variety of exercises with prisms, without satisfactory results. He believes that with a full correction of whatever error of refraction may exist, with systematic feeding and such medication as has been suggested by de Schweinitz, full doses of tincture of nux vomica, and perhaps change of scene, without any reference to the eyes at all, beyond the correction of the refractive error, a complete cure may be attained, and not in any other way.

Dr. William C. Posey, Philadelphia, declared that he fully believes that with the proper use of regular rhythmical exercises the condition of exophoria for near may be turned into esophoria for far, but for only so long as the prisms are used. When the use of the prisms is stopped the trouble returns. If the symptoms are to be held in subjection the exercises must be continued. One other point is that when the interni are exercised with prisms bases out, if the exercises be kept up a long time, Dr. Savage's hypothetical third center is also exercised, and it will be necessary to change the spherical lenses as the muscle power is brought up. Dr. Posey believes these are of value in bringing up the adduction. He has not been able to accomplish good results with bases up or down, or with the use of the cylinders, after Dr. Savage.

Dr. S. D. Risley, Philadelphia, said that he published a paper some years ago on abnormalities of ocular muscle balance, in which he outlined what seemed to him a just classification of these cases. The group of cases which depends on insufficiency of the interni, which does not exist until a number of convex glasses have been placed before the eyes, he denominated as relative insufficiency; that is to say, a patient who all his life has found it necessary to accommodate without converging might in this case converge without accommodating. When convex glasses are placed on a hypermetropic patient the condition which experience has taught him to exercise is disturbed and he is left with a relative insufficiency of the interni. These patients get well under the exercises set forth in Dr. Roberts' paper, but, there is another entirely different group which does not belong to these mentioned by Dr. Roberts nor to those spoken of by Dr. Savage; they are the patients who depend on faulty attachment of the muscles to the ball itself, deformity of the orbit. Given a deformed orbit, with different planes from the normal skull and the points of attachment may be distributed in many ways. The interni may be attached too far back, or the externi too far forward. The physician can exercise those patients until doomsday and while they may be made more comfortable for a time, as soon as the exercise is omitted their discomfort immediately returns. The muscle can never be strengthened. Dr. Risley doubts very much if any amount of exercise ever strengthens the ocular muscles, but it may teach some facility in using them.

Dr. John E. Weeks, New York, agreed with Dr. Roberts in his belief that there is a class of patients who can be benefited by these exercises, but said that there is a class that can never be benefited by prism exercises. It seems to him that there is a simple method of testing muscles to determine whether there is an absence of strength in one or the other, and that is by means of the perimeter, or better still, the tropometer of Stevens'. The power that the muscles have on the eye may be tested and one can judge very accurately whether a given case requires treatment with prisms, or operative interference. Dr. Weeks has not infrequently had patients come to him with a static exophoria of from 2 to 10 degrees and on measuring the muscles by means of the tropometer he found the actual rotation of the globe to be normal in every direction; with a rotation in, say 50 degrees; outward 45, approximately; and these patients have been benefited by treatment. When the rotation inward was perhaps 45 degrees and the rotation outward 50, such patients have not been benefited and operative procedure is necessary in the majority of patients to relieve them. He fully believes that there are anatomic defects in the muscles that require operative procedures for their correction. Each class of cases should receive its particular form of treatment and physicians have at their disposal the means of determining what that treatment shall be.

Dr. C. H. Williams, Boston, said that as the muscle is exercised and gets a little more facility or strength, the physician should keep on decreasing the correcting prism, keeping it always less than the amount of error, so that the muscle is always doing something to try to bring the eye to a proper position. In the use of the Maddox rod he finds that there is always a tendency to bring the line and the light together, a tendency to fuse images. That, however, [illegible] avoided very well by the use of a little apparatus which he showed before the section in St. Paul, consisting of a series of green figures with a red line running through them. Put in front of the eyes a pair of spectacles with one glass red and the other green, so that with one eye the patient sees the line and with the other the figures. With deficiencies in the vertical meridian especially, can a demonstration of a deficiency of one or two degrees be obtained, which could not be obtained with a Maddox rod, and these deficiencies in the vertical meridian he finds give the patients more discomfort than those right and left.

Dr. William Zentmayer, Philadelphia, said that a great many of these patients may be relieved without the use of prisms by putting on a very partial correction which relieves the disturbance created by correction of the hypermetropia. If the astigmatism has been corrected there is often relief of the asthenopic symptoms caused by the exophoria. He believes in prism exercises for exophoria.

Dr. Leartus Connor, Detroit, asked why most of the cases of muscle imbalance exist without producing any trouble and that only exceptionally is there trouble from this cause. That question he has not been able to answer satisfactorily, though the trouble may be called neurasthenic. In a practical way, he has found the use of the galvanic current of value in many instances. Another agent that he has found to be of use is very deep massage as near the medulla as possible, and of the vibratory variety. He does not know of anything that affords so much relief as this shaking up of the base of the brain. The occasional effects of such treatment are marvelous. Each case is a study of itself from the beginning to the end.

Dr. J. S. Kirkendall, Ithaca, N. Y., said that aside from medication directed to constitutional troubles, there are various reflex causes which should always be looked for. He recalled one patient who had been under the care of several prominent oculists and by the removal of a plug of wax from the ear he was able to relieve the symptoms. Another cause, the relief of which he has seen followed by good results, is an abnormal nasal condition, spurs, etc., in the nose. Many of these patients might be relieved by correcting these various reflex factors.

SUBCONJUNCTIVAL SALT INJECTIONS.*

S. D. RISLEY, M.D.

PHILADELPHIA.

Personal experience with subconjunctival injections of solutions of different crystalloid substances in the treatment of various forms of ocular disease, a study of the literature of the subject, and differing views entertained by some of my colleagues regarding the efficiency of the method, have led me to think that a discussion of the subject by this section would prove interesting and valuable. The literature is too recent and too well known to need extended references; I shall, therefore, confine these remarks to my personal experience regarding the groups of disease in which the method has proved useful, its mode of application and a brief consideration of the theoretical basis for its adoption. In my early experience, injections of solutions of the mercurial salts were first experimented with, but soon abandoned because of the severe pain they occasioned and the more or less violent reaction which was liable to follow their employment. Solutions of chlorid of sodium in varying strength were then substituted and experience soon excluded strong solutions of this salt. For several years, only the so-called physiologic salt solution has been employed at about the temperature of the body. In the cases here reported, this was the solution invariably used and extended experience has shown that it can be injected with practical impunity. In many hundreds of injections, I have not seen an instance of inflammatory reaction, or any thickening of the conjunctiva or subconjunctival tissues, or any adhesion of the tissues to the sclera, even when the injections had been made daily or on alternate days continuously for many consecutive weeks. While the results have often been disappointing, there has been no cause for regret because of harm having been done.

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* Read in the Section on Ophthalmology of the American Medical Association, at the Fifty-sixth Annual Session, July, 1905.

The following reported cases are taken at random to illustrate, not only favorable results, but groups of diseased conditions in which the method has proved a valuable addition to our armamentarium.

ABSCESS OF THE CORNEA.

Case 1.—G. G., aged 50, an Irish laborer, came to the Wills Eye Hospital with an abscess of the cornea situated near the lower limbus. There was a large hypopion with much infiltration of the cornea and the anterior wall of the abscess was breaking down into an open ulcer.

Treatment.—A Saemisch operation was performed, the man placed in bed and the usual well-known methods of treatment instituted. While they probably prevented the eye from passing rapidly into a state of panophthalmitis hypopion recurred and no progress was made toward recovery. Enucleation seemed inevitable, but before adopting this radical measure he was taken to the operating room, cocain solution instilled and an abundant injection of physiologic salt solution made under the conjunctiva at a point contiguous to the now large, open ulcer. It was immediately followed by a profuse sanguineous discharge from the needle puncture. In an hour the severe pain he had suffered subsided and in twenty-four hours the pus in the anterior chamber had disappeared. The injection was repeated on alternate days until four in all had been given, and hot saline stupes applied continuously.

Result.—The man made a rapid recovery and was discharged from the hospital with a circumscribed leucoma at the site of the original abscess.

INTERSTITIAL KERATITIS.

Case 2.—A Norwegian housemaid, aged 22, with pale blue irides, nearly white, flaxen hair; thick pendant lips, a flabby indented tongue and opaque, pale, muddy skin, clubbed fingerends, and a tall, lax, angular frame, came to the Wills Hospital for impaired vision in the right eye.

Examination.—There was some ciliary injection, there was no increase of tension, the iris reacted normally, the corneal reflex was not impaired, but there was a ring of gray opacity, apparently in Bowman's membrane, surrounding the corneal pole inclosing a nearly transparent center about 2 mm. in diameter. She was obviously in ill health, but there were no physical signs of cardiac or pulmonary disease. Menstruation was scanty and irregular. The central incisors were not notched.

Course of the Disease.—She received atropia locally, an improved general regimen was directed, and her service as housemaid was abandoned. Iodid of iron and arsenic were administered internally. The eye grew rapidly worse and photophobia increased, the opacity meanwhile spreading until the entire cornea was gray, rough and vascular, while the vision sunk until she was unable to count fingers. The left eye becoming also involved, she was admitted to the hospital, where, notwithstanding treatment, she was soon unable to go about without aid. The general health improved, but the eyes grew steadily worse, the opacity more dense and the left cornea also became vascular and the ciliary injection more marked.

Treatment and Result.—Daily salt injections were then begun as a last resort and other local measures omitted, except the hot saline stupes for an hour after injection. The improvement was at once manifested by diminishing discomfort and photophobia. In three weeks she could see her way about, and in six weeks she left the hospital, returning as an out-patient for the injection, which, however, were soon abandoned. In three months, the remaining corneal neubulæ could be discovered only on close inspection, and a year later vision was 6/60 in each eye with her correcting glasses.

Remarks.—In this patient all the usual means of treatment having failed, salt injections were followed at once by speedy relief, and ultimate cure of conditions which certainly threatened serious, permanent impairment of vision.

VASCULAR KERATITIS, WITH IRITIS.

Case 3.—Housemaid, aged 20.

History.—The patient had been under treatment at different clinics by able colleagues for more than two years. She was led to the Wills Hospital service by a friend and was admitted to the house.

Examination.—The palpebral conjunctiva showed no evidence of trachoma. The corneæ were gray and vascular throughout, there was marked pain, photophobia and lachrymation. Examination of the nasal passages and sinuses excluded them as an exciting cause.

Treatment and Result.—The salt injections followed by hot salines stupes were at once begun, and resulted in such rapid improvement that she was soon able to leave the hospital, returning alone as an out-patient on alternate days. The vascularity disappeared, leaving numerous gray spots and dots in the deeper layers of the cornea and a few posterior synechia in each eye. The deep ciliary injection and evident iridochoroidal disease slowly subsided under the iodids, and occasional subconjunctival injections for which she would voluntarily return because of the relief they afforded in the exacerbations of discomfort following exposure or use of the eyes.

Case 4.—High myopia, atrophic choroiditis, macular hemorrhage, commencing separation of retina.

Patient.—Mr. F., aged 29, traveling salesman, consulted me in February, 1905.

Examination.—He presented the following conditions: Right eye had been blind for several years from extensive detachment of the retina; left wearing — 6.50 D. V. = 6.60; fronto-occipital headaches with undue sensibility to light. The ophthalmometer revealed a considerable degree of uncorrected astigmatism, but no glass other than — 6.50 materially improved his vision. The entire fundus was fluffy, except the area occupied by an atrophic crescent at the temporal margin of the nerve. The vitreous was filled with a freely moving fine granular débris, seen with + 6 D. used as a magnifying glass. There was no impairment of the field of vision other than the narrowing due to the impaired light sense so common in choroidoretinal disease. The serious nature of his condition was explained and he was urgently advised to abandon his work and place himself under treatment.

Subsequent History.—He returned two months later in great alarm over a sudden loss of vision which had come on during sleep, two days before. His vision sunk to 1/60, with eccentric fixation, and the upper nasal field was wanting. The ophthalmoscope showed the vitreous filled with floating webs and shreds, an extensive gray opacity in the lower temporal ophthalmoscopic field, but little raised above the general level of the eye ground, but which extended upward, including the optic disc and macular region. At the macula, there was a horizontal band of hemorrhage, apparently lying between the choroid and the retina. The effusion or infiltration of the tissue was so great that the fundus could be studied without the aid of a concave glass, whereas, before the accident, — 6.50 at least was required at the fovea, and — 10. at the temporal margin of the nerve. His former glass — 6.50 D. did not improve, but rather impaired his vision.

Treatment.—He was placed in bed in a private room at the Polyclinic Hospital, bright light was excluded; blood was taken from the temporal and mastoid region. Iodid and bromid of lithium were administered internally, atropia was instilled and daily sweats secured by a twenty-five candlepower electric lamp hung under a tent formed by the blankets. His diet was regulated to meet the depleting influence of the treatment. His headaches rapidly subsided and the blind area in his field of vision diminished. At the end of two w
he became hysterical and homesick. He was therefor

from the hospital and domiciled at the house of a friend, but little improvement in the ophthalmoscopic appearances having resulted from the treatment, though the vision had risen to 6/60 with — 1 D. He then came to the office on alternate days *in a cab, and* received a copious physiologic salt injection remaining at the office in a recumbent posture for two hours. He then returned to his room and applied warm salt-water stupes, one hour in three, frequently opening the eyelids to freely bathe the conjunctival surface in the salt solution.

Result.—In a week, V = 6/30, eccentric fixation with — 1.50 D. and the cut in the field had disappeard. This improvement was followed by a partial relapse, but under the continued treatment the field was once more rapidly restored and he was permitted to return to his home on June 26, with V = 6/30 + with — 4 D. The central blind spot persisted, but its area was much diminished.

The gray infiltration of the fundus or subretinal effusion had disappeared, and a number of small atrophies in the region of the fovea were now present at the site of the hemorrhage. It remains to be seen whether, under prolonged rest and care this improvement can be maintained.

CASE 5.—Traumatic abscess of cornea with unguis and hypopion.

Patient.—A machinist, aged 30, came to the clinic of my colleague, Dr. Radcliff, at the Wills Hospital on April 10, three days after the removal, by a fellow-workman, of a chip of steel lodged in the cornea.

History.—I am indebted to his assistant surgeon, Dr. George Robinson, for the following condensed report: There was corneal abscess 2 mm. in diameter in the lower and outer quadrant of the cornea. The cornea was infiltrated with pus gravitating from the abscess quite to its lower limbus and the anterior chamber was occupied by a large hypopion.

Treatment.—Atropia was applied and the abscess was cauterized with carbolic acid. Blood was taken from the temple and continuous ice compresses were applied. The eye grew worse in spite of this treatment until April 14, when he received a normal salt solution injection.

Result.—At his next visit to the hospital, April 17, he was free from pain, the hypopion and unguis had disappeared, the conjunctival injection had diminished and the ulcer was clean and progressed to rapid recovery.

These cases are briefly reported to illustrate different groups of disease in which the injections have been used with rapid and signal benefit. The list could be indefinitely extended by the report of cases in which the course of disease was favorably influenced, but it is not my design to present statistics. Other groups might have been included, e. g., the use of injections in cases of uveitis with transient increase of tension and sand-like infiltration of the vitreous, or cases in which they were administered to hasten the absorption of swollen masses of cortex in the anterior chamber after discission of soft cataract; or cases of mild iritis with capsulitis coming on late in old people after cataract extraction, but to include them would have extended the paper beyond the time limit.

MODE OF OPERATION.

The purely theoretical consideration underlying the injection of solutions of crystalloid substances into a living animal membrane introduces us at once not only to a study of the anatomic relations of the lymph channels and apices of the eyeball, and to the nature of the tissue juices which occupy them under varying conditions of health and disease, but also to a consideration of the laws of osmosis and of dialysis.

The well-known law of osmosis of fluids, viz: that solutions of crystalloid substances of differing density or specific gravity, separated by an animal membrane, must diffuse through the membrane until they assume matter a uniform density, has suggested, for example, that in case of retinal detachment the injection into the contiguous lymph spaces of solutions of some crystalline salt of greater density than the fluid underlying the retina, through the law of osmosis, would tend to withdraw the retinal fluid to itself and so to exhaust the subretinal space. Clinical experiments based on these theoretical considerations, while in some instance of seeming benefit in hastening the disappearance of the subretinal effusion, have not, on the whole, given brilliant results in the treatment of separation of the retina. The suggestion, however, resulted in a series of more or less elaborate, laboratory investigations of the diffusion of fluids of various colloidal and crystalloidal composition until an extensive literature has been created.

From the point of view of the clinician, the results of these laboratory studies has been to offer but little encouragement to the advocates of subconjunctival injections. Indeed, if the clinician placed his trust wholly on the teaching of the laboratory experiments he would be inclined to abandon the method and to conclude that the apparent results which had at first excited his enthusiasm must have rested on faulty observation.

In witnessing the results which certainly followed the injection of solutions of crystalloid substances into or under the conjunctiva, it was natural to conclude that the resulting improvement in pathologic states was due to the injections; and in seeking for an explanation it was equally natural to turn to the well-known laws of osmosis or dialysis, the observer supposing, again quite naturally, that the diffusion of fluids through living animal membranes would be subject to the same laws which control the diffusion through organic membranes after their removal from the body. It was taught, therefore, *in the case of chlorid of sodium, for example,* that it acted as a lymphagogue; when the mercurial salts were employed that they acted not only as lymphagogues, but, in cases of infectious diseases of the eyeball, as disinfectants.

A careful study of the literature of experimental research, however, seems to show that those hasty conclusions are untenable; that any efficiency these injections may possess is not due to osmosis, or to their dialytic action, either of which would produce an acceleration of movement in the tissue juices and lymph currents; nor now to the antiseptic influence of the injected fluid, but is produced by a change in the composition of the aqueous humor, which, as a consequence of the irritation caused by the injections, becomes richer in albuminoids through the resulting congestion of the blood vessels and the increased *transudation of albuminoid* substances. The efficiency of these injections, therefore, is said to be due to the well known protective influence of the serum albumin poured out *into the* aqueous humor. In support of this view, we may recall the well-known fact that the composition of the aqueous humor is changed by paracentesis of the cornea, a procedure which not infrequently changes favorably the course of various pathologic states of the eye, e. g., in uveitis with transient attacks of increased tension of *the globe.*

When viewed from the standpoint of the clinician, it is difficult to accept the result of these experimental studies as representing the sole action of the subconjunctival injections. While it may be and probably is true that the irritation produced by the injections causes, through congestion, an increased transudation of albuminoid substances which are one of Nature's bulwarks against infection, it is not probable that these substances penetrate the tissues of the cornea in time to produce the results often speedily manifested after these salt injections. For example, the patient will often voluntarily bear witness to a clearing of the vision within a few moments after the injection, and in these cases I have frequently observed an unmistakable diminution in the corneal haze, so that the iris and pupillary area could be more clearly studied than before the injection had been given; an observation which is to be explained only on the supposition that the lymph channels of the cornea had been partly emptied of their abnormal contents into the lymph spaces surrounding the limbus. The corneal haze or impaired transparency is doubtless frequently due to an accumulation or congestion of migratory leucocytes which the lymph spaces and channels of the cornea, in response to the unusual inflammatory stimulus afforded by the existing pathologic process, and also, to the actual production of new cells from the division of the fixed corneal corpuscles. These products of inflammation clog or overload the exit into the conjunctival and subconjunctival lymph spaces with which they communicate and into which they empty under normal conditions, probably largely also through the perineural sheaths which, according to Piersol, are to be considered as lymph channels.

The fluids occupying the lymph spaces are, in health, probably derived from two sources; from the marginal vascular loops and by diffusion from the anterior chamber; the former being devoted to the nourishment of the anterior epithelium and the superficial layers of the substantia propria, while the latter supply the deeper portions of the cornea; not, however, by diffusion through the endothelial lining, but by a circuitous route through the spaces of Fontana at the angle of the anterior chamber, thence into the lymph channels of the sclera which communicate directly with those of the cornea (Piersol, Stadevini). It would seem, therefore, that while the diffusion of nutritive fluids into the corneal spaces occurs in the manner described, their principal exit is by the lymphatics of the conjunctiva, and in smaller part by the perineural lymph tracts at the corneal limbus. It is obvious that if these principal paths of exit are obstructed, either by pressure due to the surrounding inflammatory exudates, or are clogged by the excessive demand made on them in carrying away the congregated leucocytes and tissue juices invited to the cornea by irritation, that the fluids must accumulate both in the corneal spaces and in the anterior chamber.

Now it is probable that the injection of neutral, saline solutions of low specific gravity, rapidly dilate the channels of exit and, at the same time, dilute their contents, and so by a rapid diffusion of fluids hasten the flow of the diluted lymph and albuminoid substances through their normal channels. It is probable, also, that the emptied spaces are at once refilled by a fresh supply from the original sources which will be richer in albuminoid substances and withal would carry a fresh nutritive supply to the tissues. Some recent observations suggested by a renewed study of the microscopic anatomy of the ocular tissues, seem to show that the same result may be secured by other methods. The prolonged application of saline stupes, or of solutions of crystalloid substances of low specific gravity to the eye at the temperature of the body are useful if permitted to come directly into contact with the conjunctival sac.

For many years, I have treated stubborn cases of uveal disease by soaking the eyeball in an eye cup filled with warm Dobell's solution, made up with a reduced portion of carbolic acid. Until recently, it did not occur to me that its beneficial results were due to the osmotic diffusion securing a dilution of the contents of the lymph channels, but recent experiments with other crystalloid substances in solution of low specific gravity have led me to think that this is at least a plausible explanation. Furthermore, it awakens the inquiry as to whether this is not the *modus operandi* of many of the collyriæ which experience has proved useful in the treatment of ocular affections, e. g., solutions of alum, borax, zinc salts, etc.

DISCUSSION.

Dr. William Zentmayer, Philadelphia, said that while the salt solution may not produce any permanently disastrous results, it does sometimes produce disagreeable results. He saw a case of this kind in a young man who had been under treatment for some months for interstitial keratitis. The subconjunctival injections had been used and produced a marked bulbar conjunctivitis through blocking of the lymphatics. Some time later in a case in which he had been using the injections for detachment, the method had to be given up because of the severe reaction that followed. There was a great deal of congestion and after some weeks there appeared over the cornea of each eye a large crescentic patch of exudate, the surface of which was smooth in most places, but at various points there was ulceration that stained with fluorescein. The condition when he saw it last, was one of subsiding inflammation, but there was still considerable pigmentation of a yellowish color.

Dr. L. H. Taylor, Wilkesbarre, Pa., said that some time ago he saw Dr. Risley make these injections and went back home and used them on a patient under his care who had been treated for three months for opacities of the cornea. Dr. Taylor used the injections and the patient recovered so well that he was able to go to work and was temporarily lost sight of. He intends to follow up this plan of treatment later.

Dr. John E. Weeks, New York, agreed with Dr. Risley that the beneficial change or effect on the eye which is produced by the subconjunctival injections of solutions of crystalloid substances is not due to osmosis, but to influence on the circulation of the blood and lymph. Osmosis takes place when the difference between the densities of the fluids is relatively great. In edema of the glottis if a gargle of strong salt solution is used every fifteen or twenty minutes the edema is reduced in a short time. In all probability that is an example of osmosis, but such strong solutions can not be used subconjunctivally without doing damage to the tissues. The clearing up of the cornea is in all probability due to the change in the flow of fluid through the lymph spaces. The haziness is not always due to the presence of leucocytes and the clearing could hardly be attributed to the escape of leucocytes within the short interval mentioned, but it can be attributed to the removal of material from the lymph channels themselves. The reaction of the cornea in its different parts may be changed, that is, so far as alkalinity or acidity is concerned. It may be changed by sluggishness in the movement of the fluids. This is well illustrated in cases of scaling of the cornea by blood pigment. The hemoglobin enters the channels and when it approaches the center of the cornea an acid reaction may change it into hematoidin, which, in acid reaction, is a crystalloid and the blood pigment is crystallized in the tissues of the cornea. This will clear up to some extent and more rapidly if hot boric acid or chlorid of sodium solution is used. This suggests to Dr. Weeks' mind the probable explanation of the clearing up of the cornea under the influence of subconjunctival injections of saline solutions. The stimulation of the exudation from the blood vessels may also, and very probably does, take place as Dr. Risley has suggested.

Dr. A. E. Bulson, Jr., Fort Wayne, thinks that the re tion produced by the injections of normal salt solution frequently depend on the depth of the injection. W superficially, that is just immediately under the conjunctiva, it is just as efficient as when injected deeply. The reaction *may also be dependent on the frequency of the injections.* In quite an experience with the method he has found that some patients are particularly susceptible to the injections, some will have a marked reaction from small quantities, and still others will take large injections for weeks with no marked reaction. The effect on hypopyon and conditions of that kind, he thinks, depends largely on the character of the infection. He has found that the injections have little effect on the streptococcic infections or on more severe infections. The frequency of the injections and the length of time over which they are carried out, it seems to him, must also be taken into consideration if physicians are not to be disappointed in the results. A few injections will frequently not produce any decided result, whereas if carried out daily for four or five weeks they will.

Dr. S. L. Ledbetter, Birmingham, Ala., said that ten years ago he began the use of injections of mercury in this way and thought he got some good results, but the pain produced was so considerable and patients complained so much that he finally gave it up and began the use of the saline solutions instead. The results were so favorable that he prepared a paper on the subject of saline injections versus mercury injections and read it before the county society. He was much impressed with the benefits derived from it, but like other therapeutic measures that come and go, and on account of the difficulty to get patients to come with regularity and the inconvenience of carrying out the treatment, he lapsed into indifference and finally abandoned it for other methods. In the last year or so he has used almost exclusively the hot applications with the eye cup, using it two or three times a day and as hot as the patient can bear it. He found that he got practically the same results from the use of the hot normal salt solution in that way as by the injections. He believes that there are conditions in which possibly the injections will give results that can not be obtained from the hot eye baths.

Dr. Leartus Connor, Detroit, declared that the question is primarily one of fact and that Dr. Risley's observations, so far as they are positive, present facts. The reasons for the results may be many. Certainly there is a nervous element in the matter that has to be taken into consideration. The pressure on the eyeball, underneath the conjunctiva, must produce irritation of the terminal filaments of the nerve. The operation, therefore, is not only one of the relation of fluids, but is also one pertaining to the action of the nerves, by reflex irritation on the size of the blood vessels and rapidity of the currents flowing through them, making altogether a complex series of factors. For a great many years, Dr. Connor has obtained good results from the use of very hot water continuously applied; he has written one or two papers bearing on that. An additional help can be had by the judicious use of massage. He said that on returning home, after hearing Dr. Risley, he will try the use of these injections with more faith. The trouble in many cases is the objection of the patient to having a needle inserted in the eye. The other methods they do not object to.

Dr. Kaspar Pischel, San Francisco, said that some European writers state that they have used the subconjunctival injections of strong saline solution without causing particular pain, but if physicians make the same injections here they are disappointed. Patients here will not stand it like the patients abroad. The patients over there will submit to these procedures without grumbling.

Professor J. Hirschberg, Berlin, said that Europe is by no means a unity and that he could speak only of the part he knows. He sees also a great many American patients and he can not find so decided a difference between American and European patients. He uses the saline solution in exactly the same way as Dr. Risley and after employing it in thousands of cases he has not had a single patient complain.

Dr. S. D. Risley stated that he has not had any difficulty in having his patients, either private or public, submit to these injections. He purposely selected groups of cases ich have been stubborn and disappointing, and while

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abroad last summer some of his friends in England permitted him to see their work.

He had just left his own clinic, where a number of patients were getting well under the salt injections, and he suggested to Mr. Snell this method for cases of vascular keratitis, and he said he had had to abandon it because of the reaction and the great pain it caused. Dr. Risley said: "Well, Englishmen must be more susceptible to pain than Americans," and asked him his method of using the injection. The crux of the matter, Dr. Risley said, is the method. He has been doing it for ten years before venturing to say anything about it here and he has never yet seen any untoward result. The eyes will not bear mercurial salts injected under the conjunctiva. A patient who had been under Fuch's care in Vienna, for detachment, was sent here; he had been getting salt injections and had been getting very strong solutions which the eye would bear but once a week and which were placed deep in the orbit. Dr. Risley tried this, but not a second time. He found that Mr. Snell was giving injections in this way and the eyes will not bear it. Whether harm is to be done or whether the method is to be efficient or not depends on the manner of employing it. Dr. Risley has abandoned all but the physiologic salt solution because he abandoned the idea that it was by osmotic action that the benefit resulted. He believes it acts simply by dilation of the lymph spaces and dilution of the contents of the spaces and by hastening the current. The haziness of the cornea may be due to increased contents of the lymph spaces and the clearing up may be due to the change in the contents. He does not believe that it is due to a lymphagogue action or to emptying the spaces of leucocytes. In the thousands of times he has used the injections in the last ten years he has never seen harm result, but chronic conjunctivitis may result from the habit that many people have of daily washing their eyes in salt solution. He has again and again had patients of this kind. When cocain has been employed for a long while, and then salt solution used, it may set up a conjunctivitis, or when very strong solutions are used it may occur. He saw one case in which there was profuse hemorrhage after an injection, but on continued use there was no trouble. If a sterile solution at the temperature of the body is used and the bleb is not made too large—two or three minims are quite sufficient—simply lift up the conjunctiva, place the sharp needle point under it and raise a small bleb—no harm can result. It is often surprising to see how rapidly the bleb disappears.

INCISING AND SUTURING THE LIVER.

*A NEW METHOD TO RE-ESTABLISH A CONTINUITY AND FOR THE CONTROL OF HEMORRHAGE.**

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The object of all surgical operations, especially in abdominal work, should be to secure primary union. There is no reason why this principle is not as applicable to the surgery of the liver, providing a proper technic can be employed, so that when the cut liver surfaces are coaptated, the continuity of the organ will be re-established, and complete control of hemorrhage secured.

That liver surgery has failed to keep pace with the surgery of other abdominal organs can easily be ascertained on perusing the literature of the subject. The first and principal reason was the fear of hemorrhage, which, according to Kocher, is almost as true to-day as in the time of Theden, 1795. The lack of knowledge of the healing and regenerative power of the organ offers a second explanation. A third, the danger of infection, resulting in peritonitis, and, fourth, cholemia due to the escape of bile into the peritoneal cavity.

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* Read in the Section on Surgery and Anatomy of the American Medical Association, at the Fifty-sixth Annual Session, July, 1905.

Injuries of the liver, accidental or intentional, even when slight, were regarded until recently as very serious. Thus the old idea that trauma of any sort involving the parenchyma of the liver offers a very grave prognosis, was still adhered to up to the beginning of the last decade.

Theden, as early as 1795, quoted by Mayer,[1] considered hemorrhage the primary danger even in superficial liver wounds, this danger increasing with the injury of large bile ducts. As the ducts and blood vessels are larger on the under surface of the viscus, wounds in this region were considered more serious than on the convex surface. "If not for the above two dangers," he says, "wounds of the liver would not be as fatal." The means employed in combating hemorrhage and cholemia in Theden's time were rest, antiphlogistics, vesication, and venesection. Of the direct methods for controlling hemorrhage, compression by tamponade was the most primitive. Mayer[1] has also shown that all surgeons up to the beginning of the nineteenth century regarded injuries of the liver as hopeless. Larrey,[2] 1812, wrote that laceration of the liver with the escape of bile into the abdominal cavity, would always prove disastrous. In 1864, Pirogoff[3] asserted that wounds of the liver were more frequent than the stomach and spleen, and in his experience were always complicated and resulted in death. Holm,[4] 1867, followed by Joseph,[5] Koester,[6] and Hüttenbrenner,[7] demonstrated the healing power of liver wounds. Von Bruns,[8] 1870, during the Franco-Prussian war, was the first to resect liver tissue after an injury, with good results. Luis,[9] 1886, employing a combination of different methods, was the first to remove a solid tumor, which proved to be a benign adenoma. The patient died from hemorrhage.

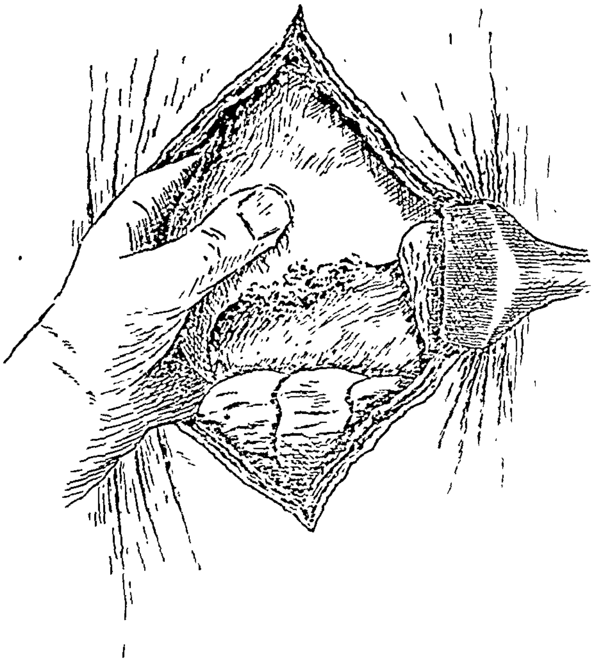

Figure 1.

A review of recent literature reveals the fact that modern surgery has done much to lessen the gravity of the prognosis in liver wounds, either accidental or those left by the surgeon after the removal of various growths.

The most complete statistics are those of Elder[10], in 1887. Of 543 cases collected by this author, he shows a mortality of 66.8 per cent.; 85.7 per cent. occurring in rupture; 55 per cent. in gunshot wounds, and 64.6 per cent. in incised wounds. These statistics are of more favorable cases, and do not include *injuries inflicted* by the surgeon while removing various tumors.

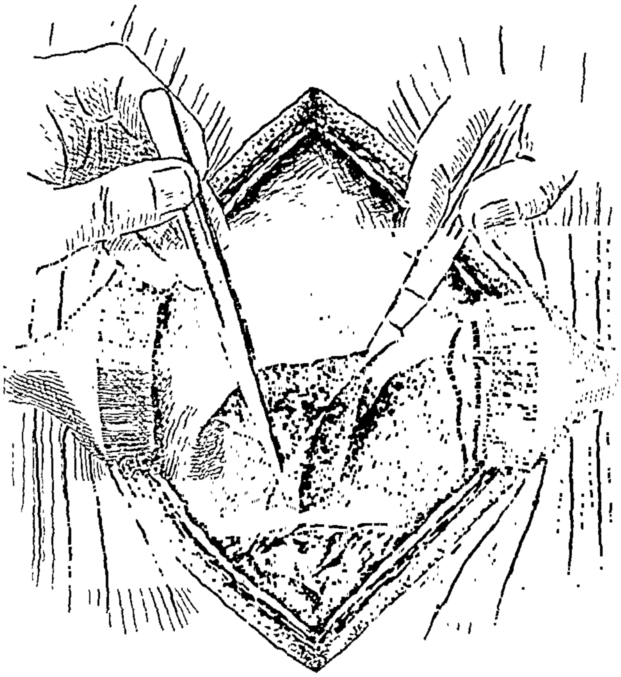

Figure. 2.

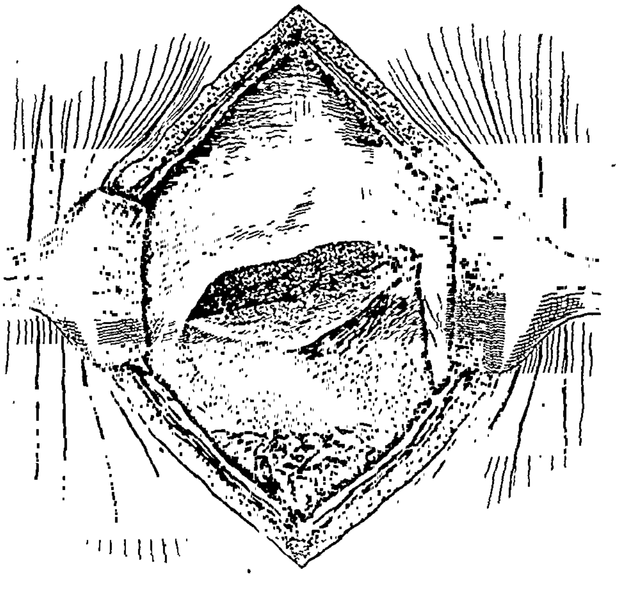

Figure 3.

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[1] Mayer on Die Wunden der Leber und Gallenblase, 1872, p. 114.

[2] Larrey: Memor. de Militarchir, 1812.

[3] Pirogoff: Kriegschir., 1864, p. 576.

[4] Holm: Sitzungshericht, vol. iv.

[5] Joseph: Arch f. Microscop. Anat., 1869, vol. 1.

[6] Küster: Centralbl. f. Med. Wissensch., 1868, No. 2.

[7] Hüttenbrenner: Arch. f. Microscop. Anat., vol. v.

[8] Von Bruns: Beiträge f. klin. Chir., vol. iv, No. 1.

[9] Luis: Gazz. delle Chir., 1886.

[10] Elder: Arch. f. klin. Chir., Berlin, 1886-7, vol. xxxiv, p [illegible]

It remained, however, for Ponfick,[11] Meister,[12] and others to stimulate the surgeon and make him less timid in his attempts to attack this organ. They demonstrated on lower animals the regenerative capacity of that organ by removing as much as three-quarters of the liver, and showing a return to its normal size by compensatory hypertrophy and hyperplasia.

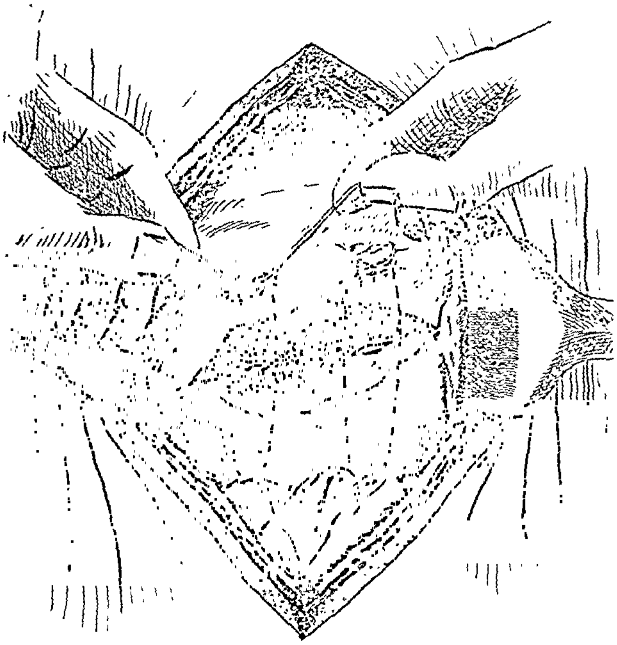

Figure 4.

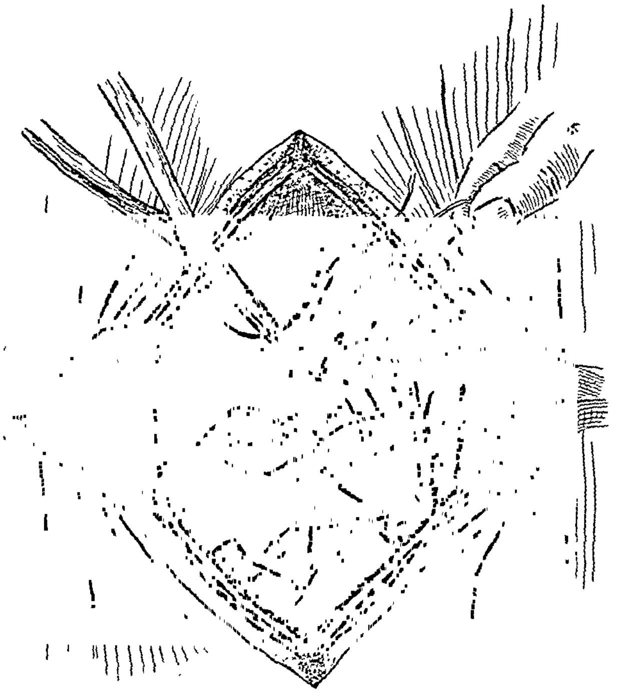

Figure 5.

The fear of cholemia due to the escape of bile, causing peritoneal involvement, as claimed by the older school of surgeons, had been refuted by Lücke and Tillman,[13] the latter citing a case of von Landerer, with injuries of the gall tract, and the withdrawal through five punctures of twenty-seven liters of bile. Peritoneal complications did not result from its presence, as bile is aseptic and at the same time antiseptic. I concur in these observations from my own clinical experience.

There were many methods in vogue up to the beginning of the last decade, all having as their basis the tamponade alone or combined with the suture, the suture alone being only a recent development.

Elliott[14] classifies the different methods as follows:

1. Packing the wound and fixing the stump extraperitoneally.
2. Packing and dropping the stump into the abdominal cavity.
3. Application of the thermo-cautery to stump and packing.
4. Combination of suture and packing.
5. The suture alone.

This is a broad classification. There are other means, however, that aid the above procedures, or are used in connection with other methods of handling the stump, as ligation of individual blood vessels, as advocated by Clementi[15] and others; ligation of vessels *en masse,* demonstrated experimentally by Kuznetzow and Pensky,[16] and confirmed by Auvray;[17] application of the tourniquet or constrictor, suggested by Terrillon,[18] followed by Israel,[18] Keen,[19] Carl Beck,[20] and others, using the same either for temporary arrest of bleeding, or for the purpose [illegible] constricting the growth to be removed [illegible] of the pedicle takes place. Hahn and Langenbuch[21] ligated the superior and inferior mesenteric arteries; Loretto,[22] Koenig,[23]

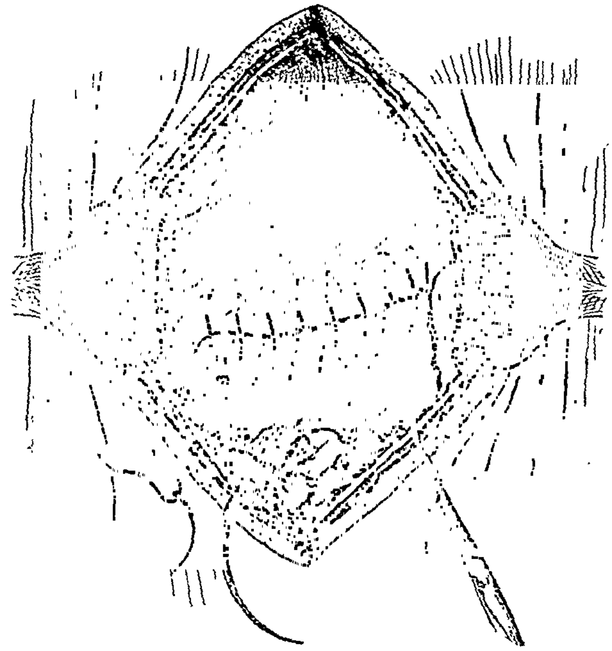

Figure 6.

matter.

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[11] Ponfick: Verhand. der Deutsch. Gessel. f. Chir., 19 Congres, 1890.

[12] Virchow's Arch. f. Path. Anat., vol. lxiii, 189-200.

[13] Verhand der Deutsch. Gessel. f. Chir., 1890.

[14] Ann. Surgery, 1897, vol. xxv, p. 88.

[15] Clementi: VIII Dol. Congres. della Soc. Ital. di Chir., a Roma, 1891.

[16] Rev. de Chir., 1896, pp. 501 and 594.

[17] Auvray: Rev. de Chir., 1898, Nos. 5, 8 and 9.

[18] v. Volkman's Deutsche Chir., 1861, No. 1. *Israel: Centralbl. f. Chir.*, 1891, p. 83.

[19] Boston Med. and Surg. Jour., 1892, vol. cxxvi, p. 105.

[20] Carl Beck: Jour. Amer. Med. Assn., 1902, p. 1063.

[21] Centralbl. f. Chir., 1891, p. 82.

[22] Loretta: Congres de Ital. Chir., Neapol., 1888.

[23] Verhand. der Deutsch. Gessel. f. Chir., 1890.

and others arrested bleeding by a running suture of Glisson's capsule. Tillman and Lücke[13] advocated the Paquelin cautery, which is still used by many operators. Suegiroff and Koslenko[23] utilized steam; Hollander and Abramowitz[24] used hot air. All of these procedures are employed by the different operators, each selecting the one best suited for the particular case. Other procedures in conjunction with the ones just cited are resorted to in handling the stump. It will be observed, therefore, that the principal object in devising these various methods, was the control of hemorrhage. The re-establishment of the continuity of liver surface was not considered, and hence the development of more proper methods of suturing liver tissue after the resection of large portions of that organ remained thus far imperfect.

Notwithstanding the modern advancement in surgery, Elliott asserts that packing of liver wounds seems to him to have settled surgical treatment of that viscus for some time, if not for all time. I am familiar with the reported results obtained by the combined method of tamponade and suturing. I am also cognizant of the fact that surgery of the liver needs advancement, and such advancement is surely coming, judging from the work already done with the suture alone.

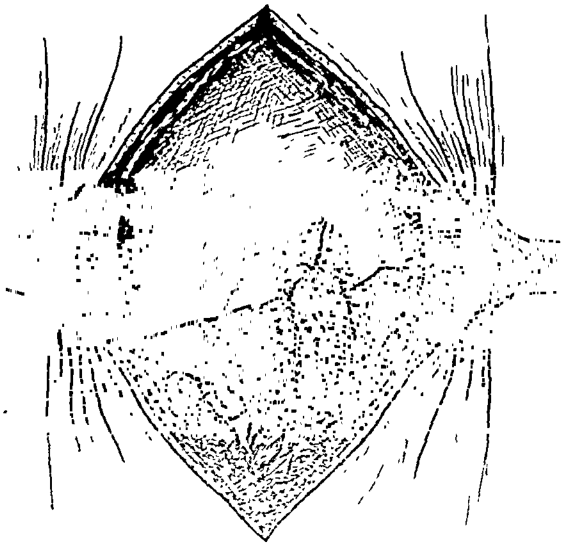

Figure 7.

It is only a very few years since the Mikulicz drain was employed to control oozing from raw surfaces denuded of their peritoneal coverings, but since we have learned to cover these denuded areas with peritoneum, the drain is dispensed with in a very large number of cases and the closure of the abdomen thus made possible. Therefore, that what is impossible and seemingly difficult to-day becomes possible and very easy to-morrow. The arrest of hemorrhage with the suture in the surgical treatment of wounds of the liver, after resection of large portions of same, has been demonstrated experimentally and clinically. Ceccherilli[25] and Segale[26] employed foreign bodies. One used perforated plates of whalebone, and the other ebony rings strung on catgut, both employing the devices for the support of the suture, which, according to these authors, completely arrested the hemorrhage, thus making the primary closure of the abdomen possible. These foreign bodies had to be left in the abdominal cavity, trusting to their encapsulation. Carl Beck[27] utilized bands of tissue from the abdominal wall, including peritoneum, fascia, and sometimes muscle. The suture is carried through these bands and utilized for its support. Kuznetzow and Pensky,[4] and also Auvray,[15] suture the liver in different ways around the part to be removed, then resect that portion of it surrounded by the suture, leaving a raw surface after resection is completed. These last-named authors demonstrated by ingenious experiments the possibility of successfully ligaturing liver tissue, since the walls of the blood vessels are sufficiently strong to sustain a weight of from 290 to 1600 grams without rupturing them, and that the isolated hepatic veins are stronger than the arteries.

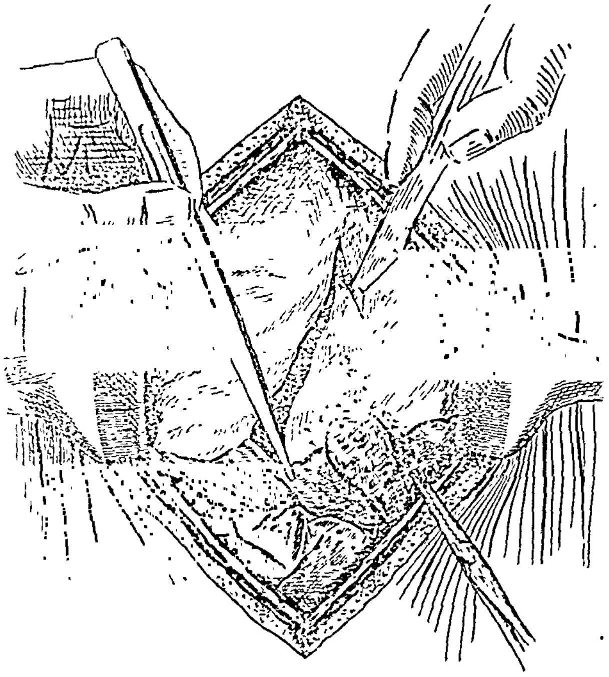

Figure 8.

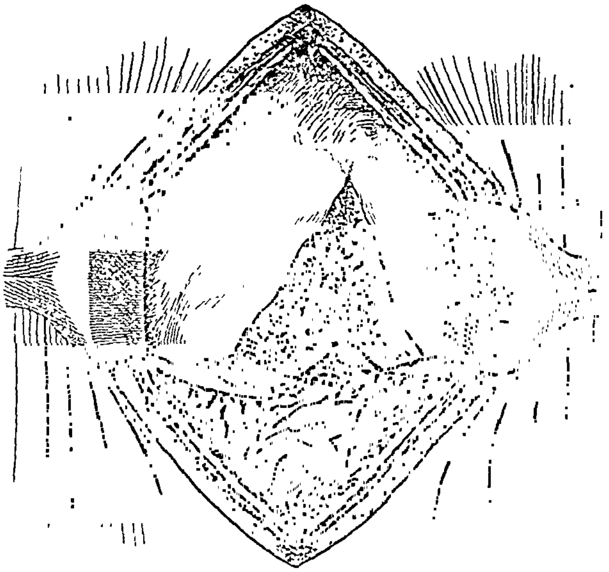

Figure 9.

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[24] Centralbl. f. Chir., Leipzig, 1902, vol. xxix, pp. 489-92.

[25] Ceccherilli: Gazz. d. Osp. e. d. Chir., 1895, vol. xvi, p. 1604.

[26] Segale: XIII Internat. Cong. de Med., Sect. de Chir., 1900, Paris. Compt. Rend., 1901, pp. 254-259.

[27] Jour. Amer. Med. Assn., 1902, p. 1063.

The clinical results obtained by Carl Schlatter[28] in his reported cases demonstrate the effectiveness of the suture in liver wounds, and the future in store for the surgery of that organ.

He reports five very interesting cases:

1. Stab wound; prolapse of colon and omentum; profuse hemorrhage from liver; wound about one inch wide and so deep that finger-tip failed to reach the bottom; two deep sutures of heavy catgut, and two capsular sutures of fine silk; recovery.
2. Gunshot wound (revolver); severe hemorrhage; three deep sutures of heavy catgut to check the bleeding; good recovery made.

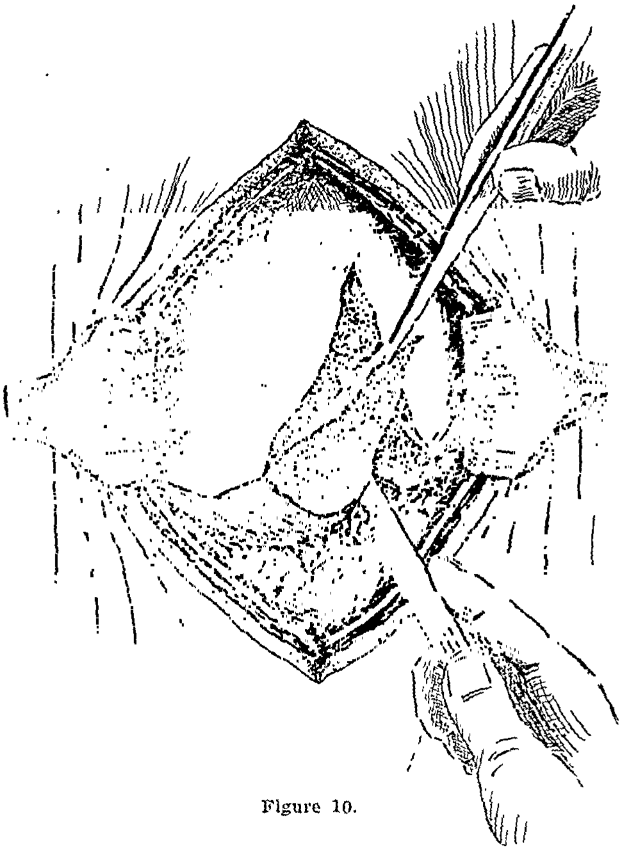

Figure 10.

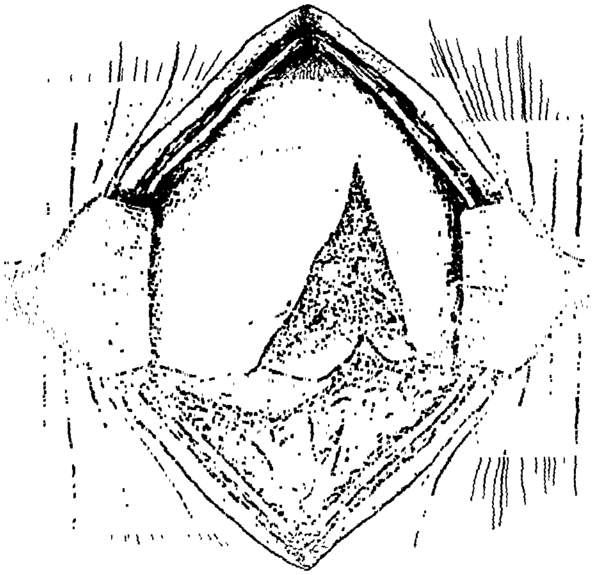

Figure 11.

3. Gunshot wound of liver by Folbert projectile; the track of the bullet *involved the stomach, jejunum, pancreas and the* left kindney; patient 17 years old; liver tissue was friable; six deep silk sutures stopped hemorrhage; death after eight hours.
4. Rupture of liver and right kidney; operation two days after; extreme anemia; laparotomy; suture of liver; hemorrhage stopped; saline infusion; death.
5. Almost complete sagittal rupture of left lobe of liver and profuse exudate of bile into peritoneal cavity; laparotomy; suture of liver fourteen days after injury; death.

In only one of these cases (Case 3) was there a tendency for the sutures to cut through the tissues. In this case silk was used instead of catgut, and the tissues were more friable than in the other adult patients.

It will be observed that the results with respect to checking hepatic hemorrhage by means of the suture are very satisfactory, and that catgut is preferable to silk. Schlatter's efforts at suturing large liver wounds are very encouraging. In view of the fact attending the results of the first two cases, Burckhardt's objections to the employment of the suture in large liver wounds do not appear valid.

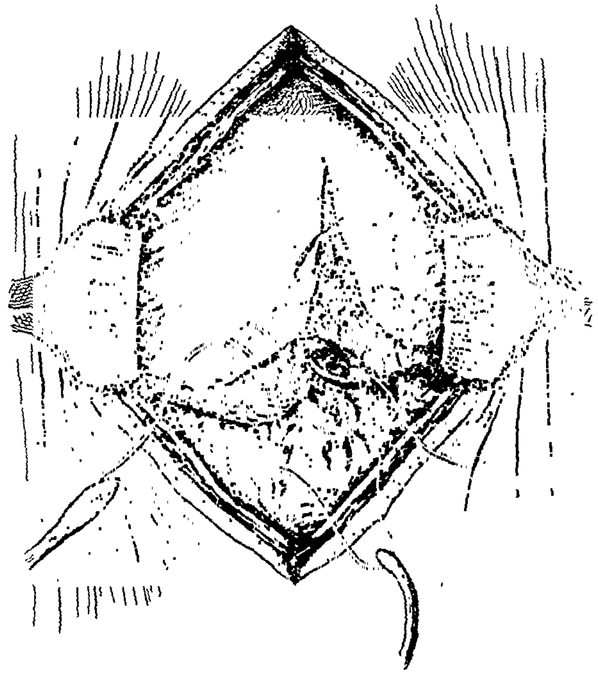

Figure 12.

After studying the subject, I concluded to conduct a series of experiments with the object of finding a method whereby large liver wounds could be successfully managed with the suture alone, re-establishing the continuity of the organ, completely controlling hemorrhage, and closure of the abdomen.

Within the past three years a series of eighteen experiments in all were conducted on dogs. Of these, two consisted in simply incising the liver through its entire thickness, dropping the organ back without suturing it, or making any attempt to control hemorrhage, which was profuse. Both dogs recovered.

In the remaining sixteen experiments the following plan was pursued: Let us suppose a portion of liver is to be resected for either a severe, extensive, crushed laceration, or a growth (Fig. 1). As a rule, these occur more often at or near the lower border of the liver. If the part is to be removed in a transverse direction, the liver tissue is incised on the upper surface, beginning at the healthy border on the hypochondriac side of the growth or injury, carrying the knife around the part to be removed to the border of the viscus on the epigastric side. The incision in the under surface is accomplished in such a manner that both will meet (Fig. 2). If desired, the incision may be commenced on the under surface and completed on the upper surface. The portion of liver thus removed by the junction of the two incisions is wedge-shaped, leaving the organ with two flaps forming a trough (Fig. 3). If the flaps do not fall into coaptation, more tissue should be cut away, as the perfect apposition of the flaps is essential for easy suturing. Before suturing the flaps, any bleeding is controlled either by a single ligation or ligation *en masse,* as the case demands.

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[28] Beitr. f. klin. Chir., vol. xv, No. 2, 1896.

The arterial bleeding is easily distinguishable from the venous oozing, and is plainly seen coursing through the dark venous blood. The ligation is accomplished by passing a medium-sized catgut suture through the entire thickness of the liver surrounding the vessel or vessels; a single knot in the catgut is now made, and gradually tightened until the bleeding ceases; the ligation is then completed by taking one or two more knots (Fig. 4). This ligature may cut its way into the liver, producing a slight oozing, which can be controlled by pressure or a superficial suture of fine catgut. As soon as the hemorrhage is checked, the flaps are quickly coaptated, and with a long non-cutting needle, threaded with a medium heavy catgut, a running suture is commenced at one end and rapidly continued in the following manner: One suture is carried through the liver tissue near the bottom of the trough, and then one superficially, and so on alternating until complete closure. It requires but very slight tension to approximate the flaps. (Figs. 5 and 6). The mode of suturing can be varied according to the fancy of each operator. The main object is to bring the two flaps together, *obliterating all dead space. The continuity of the liver surface is re-established, appearing as if a new border was constructed. No raw surface or ragged edge is to be left.*

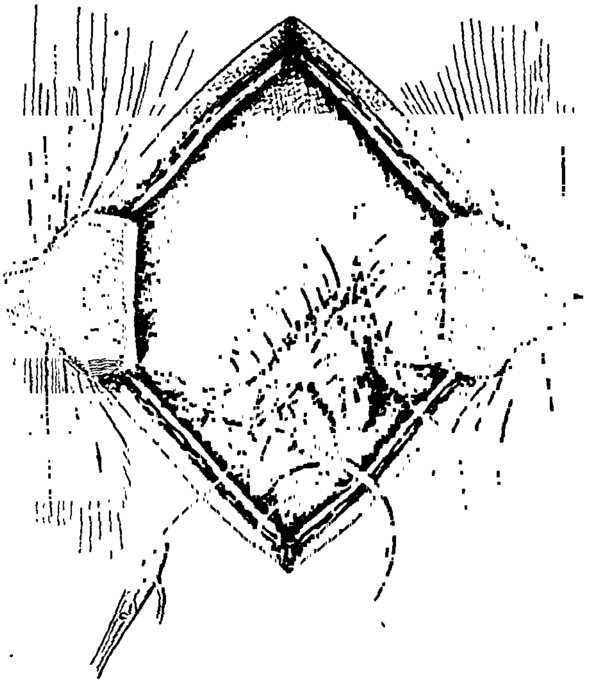

Figure. 13.

Let us assume again that a portion of liver is to be removed in a longitudinal direction to the viscus (Fig. 7). The following method is then pursued: A wedge-shaped portion of the entire thickness of the liver is first cut out (Figs. 8 and 9).

The two broad raw surfaces left by the removal of the wedge-shaped piece (Fig. 9) are now converted into troughs. This is accomplished by the excision of wedge-shaped pieces. The troughs thus formed each having two flaps (Figs. 10 and 11).

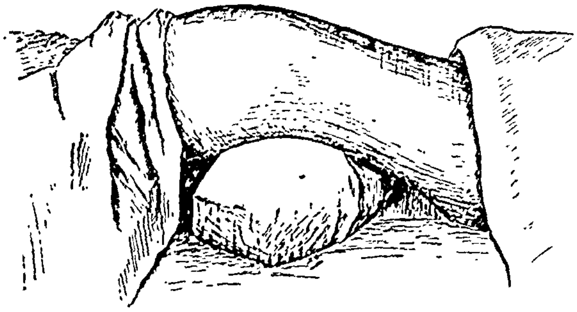

Figure 14.

When the operation is completed, the raw surfaces of the original V left are transformed into smooth, continuous liver tissue, assuming the form of liver borders, and the V space left persisting as a notch (Figs. 12 and 13).

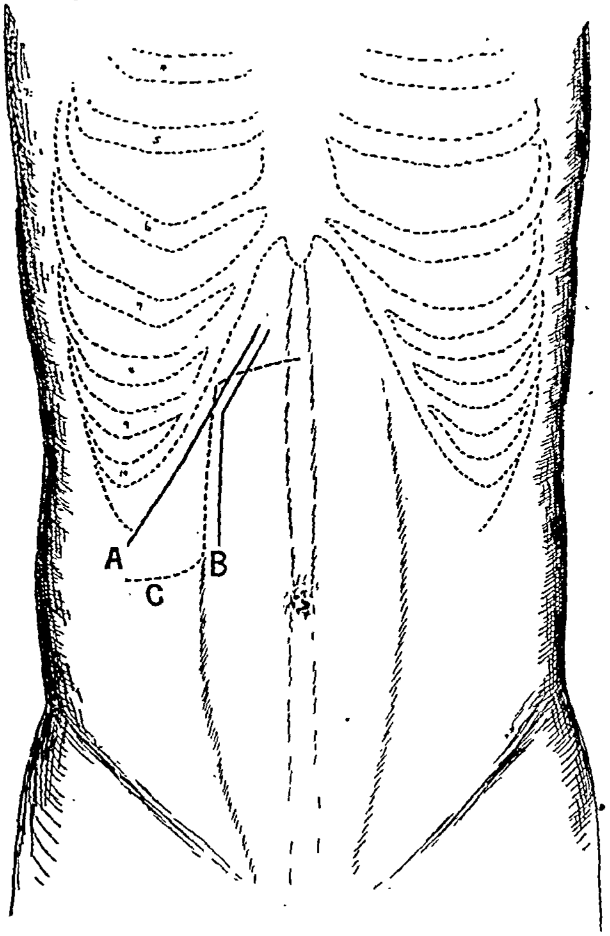

Figure 15.

This method of incising the liver facilitates easy suturing and does not require any tension on the sutures to coapt the flaps, and, at the same time, hemorrhage is successfully arrested, as was demonstrated in the sixteen experiments. There was not enough blood lost to produce shock or anemia in any of the dogs. Three died of sepsis. In none of the animals were there any evidences of either primary or secondary hemorrhage or escape of bile. When success was attained with this method of securing easy hemostasis in liver wounds, my curiosity still remained unsatisfied without any logical explanation for such accomplishment. It remained for Dr. Crile, of Cleveland, to offer his very practical explanation, based on animal experimentation and clinical observation, to strengthen my belief in the practicability of this method.

Dr. Crile, in his discussion of this subject, at the Pan-American Medical Congress, held at Panama, Jan. 3, 1905, made the following remarks:

> The research of Dr. Frank has given me a valuable suggestion. His observations on the arrest of hemorrhage are in accord with certain facts of the portal circulation, viz., the portal blood pressure is low even in the larger trunks—in the smaller vessels in the liver it amounts to but a few millimeters mercury. Since the principal hemorrhage is venous, it requires but a slight pressure distributed evenly over the bleeding surface to completely control it. The clean-cut incision, securing perfect apposition of the flaps, would require but slight pressure to control the hemorrhage. This pressure is well provided for by the method of suturing adopted by Dr. Frank.

In a recent letter from Dr. Wm. J. Mayo, of Rochester, Minn., I am informed of two cases in which the liver was injured while removing the gall bladder, causing considerable bleeding. In both cases the bleeding stopped promptly on applying the above principle. Dr. Mayo further states that from his experience in these two cases he has no doubt that this method will be of great value in direct excision of the liver.

I believe that with such results from a simple method the surgery of the liver will be revolutionized, and if put into practice operations on that organ will take rank with other modern operations.

My object is not to convey the idea that the foregoing method is ideal. Cases may present themselves where this procedure can not be carried out, on account of the inaccessible locality of the operative field. In the majority of the cases, however, I am convinced, from the limited number of experiments, that the method can be employed with little difficulty.

The question now to be considered is, What portion of the abdominal wall offers the best site for the operative incision? According to Schlatter, the upper portion of the liver, hemmed in, as it is, by the costal framework and by the diaphragm, is in a difficult position for surgical access. The left lobe and the irregular concave under surface is, on the contrary, more accessible. By moderate traction the anterior portion of the convexity, and in a similar manner the almost inaccessible posterior part, can usually be brought within reach, especially if the cushion or sand bag, as suggested by Mayo Robson,[29] is used (Fig. 14). If the site to be reached is located in the left lobe, or is undetermined, a median incision should be made. In wounds of the right lobe a curved incision along the lower border of the costal cartilages and to the right of the rectus muscle, as suggested by Kocher, is preferred (Fig. 15a). In some cases a combination of both, forming an angular incision, as practiced by Mayo Robson,[29] is to be employed (Fig 15b). Dr. Arthur Dean Bevan[29] suggests the use of an S-shaped incision in gall tract surgery, which may be used to good advantage in easily exposing the liver (Fig. 15c).

Since by far the greater number of wounds or growths of the liver are located on the ventral or lateral aspects of the viscus, these plans of attack will suffice. All incisions, whatever may be the choice, should be very large, in order to facilitate easy manipulation and quick work. For wounds located posteriorly, the lumbar incision will not answer, on account of the thickness of the muscular walls. The thoracic wall can, according to Lannelongue, be resected along the anterior portion of the eighth, ninth, tenth, and eleventh costal cartilages, as the pleura does not extend down to this part of the chest wall. Lannelongue's[28] method consists of an incision parallel with the thoracic border, and two centimeters above the same, beginning three centimeters from the border of the sternum, and ending at the junction of the tenth rib with its costal cartilage. The retraction of the divided muscles exposes the costal cartilages to be resected. They are then carefully freed from their attachments and cut through with cartilage scissors. If the ends of the ribs are now retracted and pressed apart, nearly the entire extent of the convexity of the liver can be made accessible.[30]

GALLSTONES IN THE COMMON-DUCT.*

WILLIAM D. HAGGARD, M.D.
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Gallstones in the common duct have been found once in every five cases operated on by Robson, and once in every seven cases of the Mayos. It is estimated that 67 per cent. occur in the duodenal end, 15 per cent. in the hepatic end, and 18 per cent. in the middle of the choledochus. They vary in size usually from a split pea to a nut-meg, although exceptional instances of much larger stones have been recorded. They are usually solitary, though more than one are frequently found.

They sometimes may remain many years. Moynihan speaks of one case removed after 9 years. They usually cause death in from 6 to 12 months from cholemia if the obstruction is complete and unrelieved. I have seen death ensue in 6 weeks from cholemia and infection, with intense jaundice and delirium, in spite of operation, which was only undertaken as a last resort, and which did not apparently hasten the end.

In acute obstruction Kehr advises against operation, not only on account of the high mortality attending it, but because a quiescent period usually ensues, in which jaundice and cholangitis are absent. Moreover he entertains the hope that the stone may, in some instances, finally escape and thus relieve the condition spontaneously. He makes the reservation, however, that it shall not be allowed to go unrelieved longer than 3 months, as usually beyond that time blood dyscrasia will have advanced so far that even operative relief cannot be invoked with safety.

Mayo observes, however, that "unfortunately the majority of common-duct patients have either never had an intermission or have passed beyond it and operation is no longer an election as to time, but a necessity and no matter how desperate, must be undertaken to save life."

[illegible] Monyan's Surgery of Gall Tract.
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30. In addition to the references already cited are the following: Chaot-Provonst: Arch. Prov. de Chir., Paris, 1901, vol. x, p. 198. Centralbl. f. Chir., 1890, No. 30. Wien. klin. Wochenschr., 1892 No. 2. Albert: Wien. klin. Wochenschr., 1890, No. 52. Postemski: Centralbl. f. Chir., 1893, p. 359. v. Häcker Wien. Med. Wochenschr., vol. xiv, xv, 1886. Segon: Bull. de la Soc. de Chir. de Paris, 1887, xiii. Loretta: Congress de Ital. Chir., Neapol., 1888. Pozzi: Gaz. Med. de Paris, June 30, 1888. Ruggi: Dell Epatectomia, etc., Bologna, 1889.

* Read in the Section on Surgery and Anatomy of the American Medical Association, at the Fifty-sixth Annual Session, July, 1905.

If, on the contrary, there is no infection or jaundice or a quiescent period can be attained for operation, the mortality is, in the hands of the Mayos', only 2 per cent. contrasted to the general mortality of, say 10 per cent., in common-duct cases.

It was formerly the custom to look for the presence of gallstones in the feces after attacks of colics, and if found, it was with great delight and the hope that the trouble had reached a happy conclusion. Unfortunately the escape of stones does not occur as often as was commonly supposed, as the great majority of colics are unsuccessful in expelling the stone. Even if it is expelled, it is no evidence that others are not left behind. Indeed the surgeon hardly ever fails to find others in the biliary tract after the escape of one or more in the feces. I have reported one case of 100 stones removed from the gall blader after the patient had recovered a great many, and in another case herewith recorded there were 7 stones in the common duct after the patient had collected 45 during a period of 5 years. Mayo regards the passage of stone as an indication for operation and says, "in no case was operation performed on a patient who had passed stones by the bowel that the gall bladder did not contain more."

It must be remembered that large stones are more liable to ulcerate into the duodenum, stomach or colon than they are to pass through the common duct, and even then others, although much smaller, are likely to remain.

In the invasion of the common duct by stone, beside the colic which drives it, two other elements are concerned—obstruction to the flow of bile, and infection. In many cases the symptom of obstruction is not absolute, and infection is overcome. Unless the stone is tightly impacted, the downward flow of bile tends somewhat to wash away the infectious elements. This is wanting in the gall bladder, and hence infection there, if very virulent, goes on to suppuration, gangrene and perforation. The obstruction, too, is often imperfect, and bile flows alongside of the stone. Even if a round stone completely plugs the lumen, the bile accumulates behind it, the duct distends, and the stone floats back, thereby temporarily relieving the obstruction, and thus the ball-valve stone of Fenger alternately occludes the duct and then allows the bile to escape.

If the stone is impacted the jaundice is absolute. The common duct dilates. It sometimes attains a very appreciable size. It has been so distended as to be mistaken for a distended gall bladder, a pancreatic cyst and a hydatid of the liver. The pain is referred to the back under the right scapula. It is more prolonged. Vomiting is obstinate. Tenderness is present between the xiphoid and the umbilicus. Pressure may be so great as to erode mucous membrane and finally to perforate into adjacent viscera. Gallstones discharged in this manner sometimes cause intestinal obstruction.

The typical symptoms of gallstones in the common duct are very striking and characteristic. They may be enumerated in the order of their incidence in a given attack as pain, chill, temperature, sweating, hypersensitiveness, jaundice.

The pain in the beginning of an attack is usually paroxysmal and cramp-like. It may be dull, aching and rather constant. The patient may have shivering and rigors, or a distinct chill. The temperature then immediately rises, sometimes to 104. Profuse sweating follows and the temperature suddenly drops to normal. It thus has the "steeple" appearance on the temperature chart. Jaundice, if it occurs, usually makes its appearance in a few hours, or if already present, becomes strikingly deeper. The liver is tender and generally enlarged. This sequence of symptoms commonly subsides in a few days, only to go through the same cycle every few weeks.

The ague-like character often causes a diagnosis of malaria to be made, particularly if jaundice is absent or slight. It is also described as the "intermittent, hepatic fever of Charcot." During the jaundice the stools, of course, have the grayish, white, putty appearance, and the urine is beer colored. When the stone is dislodged, the stools are again colored brown with bile and the urine is no longer discolored by it. This very variation of jaundice and stools is most significant of calculous obstruction of the movable type. Frequent repetition of these attacks causes marked loss of weight from the recurring toxemia, and digestive disturbances. The spleen is usually enlarged.

If the fever, instead of intermitting, becomes constant, it indicates a general suppurative cholangitis. abscess of the liver or subphrenic abscess. The infection may extend into the pancreas. Opie has shown that a small stone lodged in the ampulla obstructing the papilla of the duodenum may cause the bile to be forced directly into the dust of Wirsung and cause an acute infective pancreatitis with fat necrosis and death. An acute accession of intense epigastric pain, with sudden shock, muscular rigidity, vomiting and collapse is indicative of this fatal catastrophe. There is no leucocytosis in this condition which distinguishes it from perforative peritonitis.

Riedel and Robson have shown that chronic pancreatitis may be caused from the gradual extension of a chronic infection from common duct gallstones. This, fortunately, is entirely curable by the removal of the cause and drainage. Prolonged jaundice vitiates the blood to such an extent that it leaks out of its proper channels. Subcutaneous hemorrhages occur and bleedings from the mucous membranes. This lack of plasticity of the blood renders operation in the presence of prolonged jaundice dangerous, as uncontrollable oozing often occurs from the incision, that is some times fatal. Chlorid of calcium is said, by Robson, to increase the blood-clotting power, but ecchymotic patches are a contraindication to operation without preliminary treatment.

Another result of prolonged gallstone irritation is primary cancer of the gall bladder and ducts. It was observed in 4 per cent. of 1,000 cases by Mayo. A hard, nodular mass in the region of the gall bladder, not tender associated with loss of weight, preceded by a gallstone history and followed by a lemon-colored, painless jaundice, is suspicious of malignancy.

Gallstones in the common duct are rarely attended with enlargement of the gall bladder. This physical sign serves to discriminate it from about the only other condition with which it may be confused—obstruction of the common duct with jaundice from other causes, principally cancer at the head of the pancreas. The jaundice in these cases is intense and unvarying, and the gall bladder is nearly always enlarged and painless. Courvoisier's law is, "In 80 per cent. of the cases of obstruction of the common duct due to stones there is contraction of the gall bladder, while in 90 per cent. of the cases of enlargement of the gall bladder the obstruction is due to other causes than stone."

The chief reason for a contracted gall bladder with common duct obstruction is the fact that infection of the gall bladder has probably occurred some time before, which has greatly thickened its walls, and perhaps fixed it by adhesions from a pericholecystitis. The gallbladder contracted in the preceding colics which started the stones on its migration from the gall bladder during the inflammation, and caused the walls to be stiffened with inflammatory exudate while thus contracted. It is, therefore, non-distensible and no amount of obstruction to bile can dilate it. The liver ducts yield and the cells are some times hindered in their secreting function by the pressure, causing the grave type of cholangitis, which together with infection renders this complication of cholelithiasis so desperate.

In distension of the gall bladder the deep, persistent jaundice generally betokens quite certainly the non-calculous origin.

Obstruction by stone and by tumor is differentiated in the following table adapted from Kehr:

	Gallstone Obstruction.	Obstruction by Tumor.
History	*Previous colics*.	*Absent*
Duration.	Years..	Only few months, at most a year.
Pain.	Always present.	Very rare.
Fever	Frequently present . . .	Usually absent.
Jaundice.	Variable comes and goes, stools alternately gray and brown	Very intense, stools continuously clay colored.
Palpation.	Gall-bladder small and not felt.	Large, elastic, distended painless tumor.
Spleen.	Enlarged	Normal.
Ascites	Absent	Frequent in malignancy.
Cachexia.	May be simulated in neglected cases	Pronounced. Left clavicular glands enlarged.

Obstruction also occurs from (1) cholangitis extending from cholecystitis; (2) adhesions; (3) stone in cystic duct large enough to produce pressure blockage; (4) chronic pancreatitis.

While jaundice occurs as described in the movable or ball-valve stone of Fenger, yet it is not always present where stones are in the common duct. In one of my cases during five years, 45 stones were, at various times in the common duct and were passed *per vias naturales,* and eight were found in a dilated duct at the operation, still he had never had jaundice but once and that for only a few days. Kehr found jaundice absent in 33 per cent. of his cases with stone in the common and hepatic ducts and Mayo says one-third of their patients had little or no jaundice at the time of operation; disappearance of jaundice does not necessarily indicate, however, that the stone has passed.

Jaundice is not, therefore, an infallible sign and should not be looked for in the great majority of cases of gallstones. The diagnosis can and should be made in most instances before the complications which cause jaundice occur.

In 1902 Robson operated 68 times, with mortality of 15 per cent. In his last 21 cases the mortality was 5.5 per cent. Kehr had 137 cases, with 9 deaths, or 6.5 per cent. Mayo's 137 cases had 16 deaths, or 11.7 per cent. Of the 16 deaths only 7 per cent. died of the immediate effects of the operation, and the other 4 per cent. recovered from the operation, but did not regain sufficient strength to leave the hospital. In this group was the unprecedented record of 30 cases without a death.

The most convincing plea for the earlier recognition of gallstone disease before the complications and common duct obstruction occur, these surgeons, out of 1,000 operations on the gall bladder and ducts did 820 cases where the disease and stones were still confined to the gall bladder with the most surprisingly low mortality of 2.4 per cent. This included acute and chronic infections, local peritonitis, complications, intestinal fistula, etc. In 416 cases of simple gall bladder disease, the mortality was less than 0.5 per cent— equally as good as the interval operation for appendicitis in patients of the same age and general condition.

Inasmuch as obstruction is primarily a purely mechanical condition, it requires purely mechanical treatment—operative removal. This gives opportunity for the relief of the other element—infection, by drainage, and drainage is the secret of success in the treatment of inflammations of the gall tracts.

NON-CALCULOUS CHOLECYSTITIS.*

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The literature bearing on diseases of the liver and bile passages has become voluminous and of late years, since operations for the relief from gallstones has become the recognized treatment for this disease, many books and other valuable contributions have been added having special relation to the surgery of the liver, bile passages and pancreas. Notwithstanding the fact that calculous cholecystitis or cholecystitis associated with gallstones have been well worked out, it is only recently that a class of cases of long-standing gall-bladder disease without gallstones has received attention.

Gall-bladder inflammations designated as acute or chronic catarrhal cholecystitis or the complicating condition known as empyema of the gall bladder or suppurative cholangitis involving the ducts of the liver are well described.

The special form of gall-bladder inflammation referred to in this communication differs somewhat in both the clinical and pathologic relations from the conditions above referred to on the one hand and from the calculous forms of inflammation on the other. It is not contended that the infection differs in character, but rather in degree; that gallstone formation does not occur even in long-standing cases, in fact it would appear that calculous formation was prevented by some condition present in the gall bladder itself.

The symptoms closely resemble those of gallstone diseases, but the classic gallstone colics are absent, although pains somewhat similar to those due to the passage of stones may occur.

The gall bladder has been explored under the diagnosis of gallstones and none found, which has led to the assumption sometimes that the stones had escaped or that there was an error in diagnosis. It has been observed, however, that drainage relieved the symptoms as effectually as in gallstones.

It is now an accepted fact that the chief cause of gallstone-formation is infection, and, while it is known that other germs may be the cause, the most frequent infection is the colon bacillus.

The manner in which the germs gain access to the gall bladder is immaterial here; their presence is the beginning of certain changes in the organ; the type of the change it is assumed will depend on certain facts in relation to the activity of the infection. Whatever secondary influences may be operative is immaterial, when it is accepted that germ infection is the essential etiologic factor. The fact that gallstones may remain in the bladder in many cases for an indefinite period without provoking symptoms indicates that the mere stone-forming process is not attended with a very active infection. It may, indeed, be true that active infection is inimical to the formation of gallstones; much support for this contention is found in the associated conditions which appear to have their development about the time symptoms appear, and correspond with those in gall bladders which are empty so far as stones are concerned but are in such a condition of disease as to give rise to distressing symptoms, or even be a source of danger to the patient's life. The discovery of stones in the gall bladder post-mortem without symptoms during life and the apparent chronicity of a calculous condition before symptoms appear, indicate that we must look deeper than the infection which has caused the gallstones for the serious symptoms which brings the patient to the surgeon.

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* Read in the Section on Surgery and Anatomy of the American Medical Association, at the Fifty-sixth Annual Session, July, 1905.

It is when the mechanical influences of gallstones come into operation that they become of surgical interest. First, when they attempt to escape through the cystic and common ducts. Second, when they traumatise the gall bladder and either increase the activity of the primary infection or lessen the resistance of the tissues.

In calculous disease of the gall bladder and bile tracts complicated conditions frequently exist. The simplest is the pure mechanical effects of the passage of gallstones, then comes the transitory or more continued toxemia from obstruction, and then the secondary mixed infections or the pus-forming activity of the primary colon bacillus which constitutes the beginning of stone formation, the immediate exciting cause being the trauma; usually the blocking of the cystic duct. The existence of pus in the gall bladder or an empyema may be said to follow the formation of gallstones if such be found in the gall bladder and not be coexistent primarily with the formation of calculi.

A separate but not altogether different condition is the infection of the gall bladder without the formation of stones. This has generally been designated as catarrhal cholecystitis, but this does not seem to be an entirely satisfactory definition, for it is not shown that the inflammation differs in its origin from the cholecystitis associated with gallstones, but, in fact, is dependent on the same kind of infection, differing only in degree or intensity. The gall bladder, when exposed, presents nearly the normal appearance, but on closer examination the walls appear to be a little thicker than is found in the healthy organ, and the lymphatic glands along the common duct are frequently enlarged. The bile is dark, thick and ropy, and the mucous membrane of the gall bladder is found covered with minute crystals of cholesterin; in some cases the mucous membrane is more or less actively inflamed or even ulcerated. When ulcerated patches are found, the presence of cholesterin crystals is less marked. It would appear that the cholesterin deposit marks a less active infection is rather more than less in the non-calculous yet both conditions may be found in the same gall bladder and may differ in time of development. In the latter the infection is too severe to result in the formation of calculi and prove inimical, even to the secretion of the cholesterin by the mucous cells, or, if the process has once commenced, is arrested by the increasing violence of the infection.

These same conditions may be found in calculous gall bladder, but mark different stages and different degrees of development, but in the non-calculous the milder or stone-forming period has never existed. Experimental evidence in support of the fact that the formation or non-formation of gallstones is largely dependent on the character of the infection as shown in the instances where injection into the gall bladder of virulent cultures produce severe cholecystitis and the injection of attenuated cultures may be followed by the formation of concretions, particularly if the flow of bile be hindered. Of course, it is not possible to state where the line may be drawn as to the condition in the gall bladder which may lead to the calculous and non-calculous inflammations. Clinically it is found that about 4 per cent. of the inflamed gall bladders do not contain calculi, and while the bacteriologic evidence does not appear to show that the infections differ, except in certain cases of empyema where a mixed infection has followed the traumatising or obstructing influences of stones, the infection is rather more than less in the non-calculous cases, and the other evidences of infection are even more marked.

To make our meaning more clear, we make the comparison between the calculous and non-calculous form during the formation of gallstones and not at a time when these stones, by trauma or obstruction, have set up secondary changes in the gall bladder or have invited a new or more virulent infection, or where incidentally a more virulent infection has occurred, in a pre-existent calculous gall bladder, when, according to the contention in this paper, gallstones cease to form on account of an influence exerted on the cholesterin secretion of the glands of the gall bladder.

Certain clinical facts and certain pathologic conditions appear to show that the infection in the non-calculous cases is more serious than the simple primary calculous varieties where the clinical evidence is the sudden, severe, classic, gallstone colic. The pathologic evidence lies in the thickened gall-bladder walls, the varying condition of the mucous membrane from a cholesterin crystal covering to a swollen, softened and, perhaps, ulcerated mucosa; the enlarged lymphatic glands of the common duct and in some cases a chronic, interstitial pancreatitis from the extension of the infection along the mucous membrane of the bile ducts to the duct of Wirsung and on into the pancreas, the organ becoming thickened and so dense as to give rise, at first, to the idea of malignancy. Not only does the infection extend outward, but not infrequently into the liver ducts, inducing a more or less severe cholangitis. In a certain number of cases it will be found that the infection has extended through the walls of the gall bladder and produced a pericholecystitis, as shown by adhesions particularly to the stomach.

The clinical evidence presented by non-calculous cholecystitis often leads to some confusion as to diagnosis. The clear and well-defined evidence presented by the passage of gallstones, the sudden onset of pain and its abrupt subsidence, and the prompt return of the patient to his former state of well-being, present quite a different picture from the more protracted sense of stomach sickness and pain in the region of the gall bladder.

Some degree of jaundice will be found in cases where the mucous membrane of the common duct is swollen, but is of short duration. Plugs of mucus may cause pain in passing through the bile ducts, but of less acute character than stones. The symptoms due to mechanical conditions, as the swollen mucous membrane of the common duct and the plugs of mucus, are supplemented by those of a more general character which are dependent on and are associated with infection as they involve the gall bladder, bile ducts, liver and perhaps the stomach and pancreas.

Chills and fever and pain in the region of the gall bladder and slight jaundice are not infrequently seen, but the jaundice is not very severe or very long continued, unless an associated calculous obstruction exists. The stomach attacks are more frequent and more troublesome than in uncomplicated calculous conditions, and if adhesions to the gall bladder exist some dilatation of the stomach may be found from interference with satisfactory stomach drainage. The symptoms due to the occasionally associated pancreatitis are too indefinite to be positively determined.

It is not intended in this discussion to include the phlegmonous forms of cholecystitis in which infection is so violent as to present the clinical picture and the pathologic findings of acute suppurative cholangitis, but rather the more chronic and less active forms of cholecystitis unattended with gallstone formation and with more or less frequent extensions of infection. In these cases the gall bladder is not contracted and there is no serious obstruction to the flow of bile into or from the gall bladder, and perhaps in the majority of cases the infection is confined to the gall bladder. In the milder forms there is no rise of temperature, or at least very slight, but the symptoms may be complex and lead to a doubt as to the exact diagnosis.

The results of operation in the milder cases of non-calculous cholecystitis are as good as in uncomplicated calculous cholecystitis. While in the more severe the mortality is higher and convalescence more protracted. In the milder cases a cholecystotomy with drainage for ten days results in a speedy cure. In the more severe infections a longer period of drainage is necessary, or it may be that a cholecystectomy is necessary. The more serious forms of infections are illustrated by the following case:

CASE 1.—A woman, 35 years of age, had suffered for a number of years from obscure symptoms of gall-bladder disease. She would have a slight chill, followed by a temperature of 101 or 102, pain and tenderness in the region of the gall bladder, and would be confined to her bed for a week or ten days, after which she resumed her household duties, but never appeared to recover her health fully. She lost somewhat in weight. Examination showed tenderness in region of gall bladder and some dilatation of the stomach. A diagnosis of gallstones was made. On operation the gall bladder was found free from gallstones, the bile was thick and ropy, gall bladder inflamed and thickened and adherent to the stomach. The adhesions were separated and rubber tissue interposed between gall bladder and stomach and the gall bladder drained in the ordinary manner. A fair amount of bile drained and a favorable result expected, but in twenty-four hours the temperature had reached 103, in thirty-six hours 106, and death quickly followed. There was no peritonitis and the fatal result was attributed to a cholangitis.

A second case illustrates a type in which the infection is less severe, but which had extended in a chronic form more widely.

CASE 2.—A man, 26 years of age, had had, four years previously, some attacks which had been diagnosed as gallstone colic, but for the past three years there were no distinctive attacks of pain, yet the stomach distress and nausea was more or less persistent, appetite uncertain and digestion much disordered. At times there was the faintest appearance of jaundice. Physical examination was negative and in the absence of evidence of disease of other organs it was determined that the gall bladder was responsible for the ill health. When the organ was exposed there was little in its appearance to indicate disease. It was moderately filled with bile and no stones could be felt. Its walls were somewhat thickened; the glands along the course of the cystic and common ducts were enlarged and at first communicated the feeling of stones in these ducts. The head of the pancreas was enlarged and firm, giving rise at first to the idea of malignant disease. The pathologic diagnosis was non-calculous cholecystitis with chronic pancreatitis from infection extending from the gall bladder. A somewhat prolonged drainage of the gall bladder resulted in a satisfactory recovery. Much anxiety was experienced for two weeks on account of a temperature from 101 to 103 degrees, which varied from day to day according to the amount of bile drained. Never before the operation while the patient was under our care had we found the temperature above 99.5. We do not attribute the temperature following the operation to any condition of the wound itself, but rather to an infection of the liver.

Our experience has led us to expect more temperature in these non-calculous cases than in uncomplicated gallstone involvement on account of the more widespread and more active infection. This seems to accord with general surgical experiences with operations in actively infected area. Our mortality from operations in this class of cases is even greater than in common-duct cases when the obstruction is not complete and when there has been no chills and fever. If in calculous cases chills and fever have occurred it may be assumed that an additional infection has supervened, or to the same cause and obstruction of the cystic duct, a pus formation and an empyema.

On theoretical grounds the cases considered in this paper indicate a cholecystectomy. In my opinion, it may be accepted as a rule that cholecystectomy is strongly contraindicated in all cases where there is a doubt as to the open condition of the common duct, whatever the condition of the gall bladder. In our cases of non-calculous cholecystitis both the cystic and common duct are freely open, except at periods of swelling of the mucous membrane, which are of comparatively short duration, and yet, notwithstanding this fact, infection has occurred and continued and spread out from the gall bladder at intervals, with greater or less degrees of intensity, to the liver ducts, common duct and even to the pancreas. The whole problem in treatment consists in drainage, and it may be assumed that, as the gall bladder is the chief center of infection, its removal would be the logical surgical procedure, and yet it may not be true that the additional advantage of external drainage may more than compensate for the general unsurgical procedure of leaving an infected structure which may, perhaps, demand a subsequent surgical consideration.

In deciding this question the surgeon will, no doubt, be governed by his ability to determine with absolute certainty if the common duct is equal to the exigencies of the case in affording all the drainage necessary. It would certainly be a much less serious mistake to leave a gall bladder that might safely come out than to take out a gall bladder that it much needed for drainage. The one could be corrected by a subsequent operation, while the other, it is feared, could not be corrected.

DISCUSSION.

ON PAPERS OF DRS. FRANK, HAGGARD AND FAIRCHILD.

Dr. A. MacLaren, St. Paul, Minn., predicted that Dr. Frank's statement would soon be accepted by all, i. e., that the liver is not a dangerous organ to attack, and that hemorrhage is not particularly to be feared. He considered Dr. Frank's flap methods for closing liver wounds very ingenious and very interesting. A simple over and over suture of catgut, passed with a large sized, full curved, round pointed needle and not drawn too tightly, has been found by Dr. MacLaren to control the hemorrhage very readily; if a wide V has been taken out, the raw surfaces must be brought together by transverse sutures of catgut placed in the same way. Recently three separate resections of the liver for gumma with simple over and over suture gave no bad results. Dr. MacLaren believes that the finding of gallstones in the feces is always associated with the presence of other stones in the billiary passages, as Dr. Haggard said. Jaundice is more common where a single stone is lodged in the common duct than where there are several. Dr. MacLaren recently found, after a careful study of his records, that he had operated on 10 cases of perforation of the gall bladder, two of which were of the non-calculous variety. Both perforations of the gall bladder were associated with small abscesses between the gall bladder and the duodenum.

Dr. Miles F. Porter, Ft. Wayne, Ind., although he admitted that the passage of gallstones usually means that there are more in the gall bladder, could not agree that it always means this. In two cases a number of stones were passed, and an operation showed that the last one had been passed. This is not of much importance, except from its politic side. It may be well to inform the patient that possibly the last stone has been passed. In any event, drainage of the gall bladder will usually be required. These cases may go on for a long period of time without symptoms to indicate the serious condition that is present. Dr. Porter has seen a case with a history of gallstone colic ten years before operation, and in the intervening time the woman had enjoyed good health, being free from symptoms pointing to the liver. Obstruction of the bowel finally called for operation, when the cause of the obstruction was found to be a large gallstone which had probably caused ulceration by pressure and this escaped into the bowel.

Dr. O. Grothan, St. Paul, Neb., considered it misleading to state that the passage of numerous stones by the bowel indicates that others will be found in the gall bladder. Six months ago he operated on a patient who for six or seven years had passed hundreds of stones, and in all this time at certain intervals had taken olive oil. He operated with good faith that he would find stones, but he did not. The gall bladder was very little thickened and the woman has been well since.

Dr. Charles M. Cooper, San Francisco, spoke from the neglected standpoint of diagnosis. We see many patients with pain in the upper abdomen; in some associated with vomiting; in others, not. The association is valuable as favoring the localizing of the seat of trouble in an abdominal viscus rather than in retroperitoneal structures, e. g., aortic aneurism in which there may be the most intense pain unassociated with vomiting. *Secondly*: Clinical re-examinations can not be made too frequently. The symptoms may be entirely masked at a first investigation, and yet a subsequent one may determine at once the organ involved. Thus, in a patient lately examined nothing abnormal could be detected. An equally full examination after a car ride over irregular streets demonstrated Head's area of hyperesthesia, a tender Robson's point, and pain associated with Murphy's maneuver. *Thirdly*: Mechanical stretching and relaxation of adhesions produced by change of position are of use. Certain movements or positions thus occasioning or relieving pain will sometimes suggest the organ involved and perhaps the nature of the lesion. *Fourthly*: Occasionally epigastric murmurs are associated with gall-bladder trouble, in some cases being directly due to a misplaced gall bladder, in others to a complication. *Fifthly*: The x-ray has a corroborative value in abdominal diagnosis. Dr. Cooper has plates which show liver tumors, a Riedel's lobe, a gallstone, shadows due to gall-bladder disease as proved by operation, and a fusiform dilatation of the aorta. The absence of leucocytosis during an attack of gallstone colic is by no means constant. Such attacks are often associated with septic absorption, and not infrequently there is marked leucocytosis which occurs quite quickly and disappears, as a rule, in a day or so, or may be in a few hours.

Dr. A. J. Ochsner, Chicago, emphasized the importance of making distinct flaps because on this depends to a great extent the ease with which the closure of the cut liver surface by first intention is accomplished. He also called attention to the importance of the formation of a clean surface. In a jagged, torn liver it is very much more difficult to stop the hemorrhage and to effect closure of the wound. A third point he mentioned is the slight amount of tension required in suturing a wound in the liver. If these three important points are borne in mind, it matters very little what else is omitted. The danger from hemorrhage amounts to very little if one comprehends these three important points. Dr. Ochsner said that there are a few points in Dr. Haggard's paper which should be emphasized. Acute obstruction of the common duct due to the pressure of stone should not be looked on as an emergency. There was a time when surgeons would operate on such patients at any hour of the day or night, and the mortality was very large. The patient practically always vomits bile before the obstruction becomes complete. This is due to an anatomic fact. The circular muscles of the duodenum are stronger at a point from two to four cm. below the entrance of the common duct than in any other part of this portion of the small intestine. Whenever there is an inflammatory condition, in any movable portion of the body there is some form of provision by which physiologic rest may be established. When anything passes through the duodenum at the entrance of the common duct there is a tendency for the emptying of bile into the intestines. The increased circular muscle fibers form a kind of sphincter which seems to serve the purpose of establishing physiologic rest when the common duct is inflamed as a result of the presence of a stone or sand in its lumen. Nature can be helped greatly in this matter, and the condition be changed from an acute to a chronic one. This can be accomplished by washing out the stomach and withholding food, so that there is no occasion for anything to be passed from the gall bladder through the common duct as the parts are put at rest. The acute condition will then subside. In many of these cases in which from one-quarter to two grains of morphia given hypodermically had no effect, the pain stopped within two hours after gastric lavage had been employed and did not recur so long as no food was given by mouth. It is well to prohibit the use of food by mouth until the acute symptoms have completely subsided and to operate before a recurrence of the attack.

Dr. J. H. Carstens, Detroit, drew on the blackboard a picture of an instrument invented by Dr. Ross. This instrument will get right under the gallstones. If necessary a couple of sutures may be inserted before using this instrument. Dr. Carstens had stated that he had trouble with the so-called gastroenterologists. They wash out the stomachs and give test meals; the patients are sent everywhere and are treated for acute gastritis. If Dr. Carstens had a case of so-called acute gastritis, with no other symptoms, he should at once decide that there was some gall bladder trouble. It may only be due to the bile being too thick, causing a partial stasis. This, he believes, is a gall-bladder disease, although possibly not gallstones.

Dr. W. J. Mayo, Rochester, Minn., said that after operations on the liver, the method of stopping hemorrhage based on the principle of Dr. Frank is well worthy of trial, and that he has practiced it with satisfaction in two cases since his attention was called to it. Dr. Dudley Tait has also brought out a method based on the preliminary injection of hot water into the liver along the line of proposed incision to stop hemorrhage. Dr. Mayo said that the whole question of gall-bladder surgery in connection with the common duct stone lies in the fact that when the disease is confined to the gall-bladder the operation is comparatively simple and will be followed by a very large percentage of permanent recoveries at a small risk, while, when the stones have entered the common duct the whole of the liver ducts are exposed to infection with possibilities of disastrous complications and secondary conditions. The operation is no longer simple, easy and safe. The question which the patient must consider is whether he can afford not only to continue to suffer from the gallstones but also to be exposed to the serious danger of liver duct infection or to the more remote but nevertheless possible chance of carcinomatous degeneration. In regard to jaundice, Dr. Mayo said that the history will usually show that there was more or less icterus at the time the stone passed into the common duct, although stones may remain in the common and hepatic ducts for years, without jaundice, giving manifestations of digestive disturbance. If the jaundice comes on without pain and does not change more or less in the early stages and especially if a tumor be present, malignancy is to be feared. With stones in the common duct the jaundice will be variable and changeable in the early stages, although later it may disappear entirely or become permanent from obstruction.

Dr. J. J. Hamilton, Caldwell, Idaho, related a case of a Scotchman who had some trouble with his gall bladder. A surgeon operated on him and removed 9 gallstones. Several others coming away from the wound from time to time a year later, the gall bladder again swelling up. The patient requested a young physician to operate on him without an anesthetic, and he refused to do so; the Scotchman returned home and operated on himself with a pocket knife. He removed several stones, made a good recovery and has since remained well.

Dr. Jacob Frank emphasized the importance of taking up liver surgery and putting it on a plane with appendicitis. In all the experiments on dogs there was no attempt to control hemorrhage, but he does not know how this would be in the human being. If there was a tumor situated somewhere along the lower border of the liver, and the operation was done quickly he does not think that there would be any danger to the patient. The dogs showed no signs of anemia. It is strange that there should be very little hemorrhage in liver operation. It looks like a great deal, but it is not, and simply bringing the flaps together controls it. Dr. Crile has explained to Dr. Frank why this is, stating that the blood pressure is very low in the liver. In bringing the edges together the capsule of Glisson is brought together.

Dr. W. D. Haggard said that when patients state they have passed gallstones, particularly those patients who have had the olive oil treatment, he always insist on seeing the stones, as these so-called olive oil stones are very frequent. The mortality is about 2 per cent. in stones of the gall bladder, and about 1 in every ten when the stones are in the common duct. It is not so much a surgical condition as one of cholemia. Operations should be avoided in acute obstruction of the common duct. Safety lies in the excellent preparation of the patient by preliminary treatment. Dietetic and other means must be employed, and the operation should be made a surface operation. If the gall bladder is used as a tractor, it is practically a surface operation.

Dr. D. S. Fairchild declared that it is the experience of many that some of the most serious difficulties arise in the cases in which there are no stones; the cases in which the infection extends from the gall bladder to the liver and pancreas, although this applies to only a very small percentage of cases. It should not be assumed that there are gallstones simply because symptoms are present which are referred to the stomach and gall bladder.

The "Vestiaire" of the Hospitals.—This is the name of a French society which recently held its first annual meeting. It was organized for the purpose of supplying comfortable and respectable clothes for persons just dismissed from the hospitals. As a rule, the poor reach a low ebb in their fortunes before they decide to enter the hospital, and they are financially stranded when they leave it, which interferes with their finding employment. The society already has over 4,000 members, and has collected 12,000 garments and a capital of nearly $4,000. Subscriptions and gifts of clothing are sent to the central office at Paris, rue de Grenelle 42. Debove, dean of the Paris faculty, is president of the new society.

SURGICAL BACTERIOLOGY OF THE MOUTH.*

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In this section, devoted as it is to stomatology, I think that we all must admit that the bacteriology of the mouth should play an important rôle. The subject is of importance to the physician because here we find local manifestations of many constitutional diseases, such as influenza, diphtheria, smallpox, varicella, measles, scarlet fever, tuberculosis, syphilis and scurvy, in some of which at least the specific micro-organisms may be found in the oral cavity. There are also a variety of pathologic processes which occur within the mouth or adjacent bones, many of which are due to pathogenic micro-organisms. Among these may be mentioned tuberculosis, actinomycosis, osteomyelitis, thrush, anthrax, erysipelas, ulcerative and gangrenous stomatitis, pyorrhea alveolaris, and caries of the teeth. To any one who is doing mechanical or surgical work within the mouth the subject is of interest because of the frequency and variety of germs encountered, and, as is well known, these germs may at any time, unless precautions are taken, infect the wounds made. This fact I have seen most painfully and forcibly illustrated by the death of two patients from a most virulent pyogenic infection following the extraction of a tooth.

With the inspired air, with the food and drink taken from our fingers and from foreign bodies introduced into the mouth, a great variety of pyogenic and pathogenic germs gain an entrance to this cavity. The natural warmth and moisture of the mouth, as well as the organic matter so frequently present, then make it a most favorable site for the growth of bacteria. This is true even in healthy persons who do not properly cleanse their mouths, but especially so in those whose oral cavity is the site of some pathologic process.

A very commendable work has been done in the bacteriology of the mouth by a number of investigators. Among these may be mentioned Miller of Berlin, Vignal, Fluegge, Sanarelli, Netter and others. These results have not been uniform, as one might readily expect, for even in the examination of healthy mouths there is a wide difference in the bacterial contents.

For the purpose of carrying on these investigations, the subject was divided into five parts. The first class included clean mouths; the second, ordinary kept mouths; the third, filthy mouths; the fourth, tobacco chewers' mouths, and fifth, mouths in which there were distinct pathologic processes.

In the examination of the first four groups, one hundred swabs were taken from different individuals, dividing them as equally as possible into the different groups. The first twenty swabs were taken from mouths which were sweet and clean and in which the teeth were well preserved and clean. These swabs were washed in a normal salt solution and then used as a medium for further study. First hanging drops were studied. In all instances the hanging drops showed thousands of bacteria of different forms and shapes. Micrococci were found in all of the mouths examined. These varied somewhat in size and number; the most frequent were staphylococci, which were present in every case examined, and in 15 of the 20 cases examined *Micrococcus tetragenus* was found, while in 6 of the cases sarcinæ were discovered; of the bacilli, all shapes and sizes were found. Some of these were motile and others non-motile. Some of them were spore-forming and others non-spore-forming; of the spirillæ, both long and short were found. These salt solutions were then plated on agar and gelatin and incubated for further study. On all of the plates the colonies were too numerous for study and it was found necessary to make dilutions of 1 to 100 in order to get the colonies fewer for individual study. These colonies were stabbed off and agar, bouillon, gelatin and Dunham's solution, lactose and glucose bouillon, fermented tubes, lactose and glucose agar shake culture made, besides milk and litmus gelatin. By a minute study of these cultures it was shown that thousands of bacteria noted in the first examination were innocuous and that all but the streptococci (noted in two cases); *Bacillus coli communis* (found in three cases); *Bacillus subtilis, Staphylococcus* (found in all the cases), and the *Micrococcus tetragenus* (found in fifteen cases, were non-pathogenic. Of the non-pathogenic germs a large number were acid and gas producers. Many, though, were species of putrefactive bacteria. There were also a large number of micro-organisms which could not be identified, but which seemed to correspond with those described by Professor Miller of Berlin.

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* Read in the Section on Stomatology of the American Medical Association, at the Fifty-sixth Annual Session, July, 1905.

THE ORDINARY KEPT MOUTHS.

In making a study of thirty of these cases, they were found to differ from the well-kept mouths by the fact that the micro-organisms were much more numerous. This was especially marked where small pieces of putrefactive matter were present in the cavities of decaying teeth. The majority of micro-organisms in these cavities were, however, putrefactive germs, and, as they grow with great activity, they may kill out the other germs. In two of the thirty cases the bacillus of influenza was also found.

THE STUDY OF FILTHY MOUTHS.

In the majority of these cases there were pathologic processes going on in the mouth, such as decayed teeth, suppuration of the gums or small ulcers. In two cases thrush was present. In all of these filthy mouths millions of bacteria were present and a much larger per cent. were virulent. The pneumococcus was present in ten of the thirty cases. In the cavities of decaying teeth large numbers of acid producers and putrefactive bacteria were present. In the cases of pyorrhea large numbers of both *Staphylococcus pyogenes aureus* and *albus* were found. In three cases of abscess *Staphylococcus pyogenes aureus* was demonstrated. In two of these there was also *Staphylococcus pyogenes albus*, and in one *Staphylococcus pyogenes citreus*. In a large number of these mouths *Micrococcus tetragenus* was also present. In a great many cases putrefactive germs were well pronounced and gas formation very marked. The foul breath in these individuals is probably due to these obnoxious gases given off by the activity of these germs.

TOBACCO CHEWERS' MOUTHS.

An examination of these cases shows that the tobacco chewer's mouth is more filthy than the ordinary filthy mouth. The examination also shows that the tobacco had no restraining influence on the growth of bacterial activity. The majority of these mouths were pathologic and contained decaying teeth, small ulcers and suppurating processes about the teeth. It was not apparent that the tobacco was the cause of the decay, only that the individuals were less careful of the condition of their mouths.

BACTERIA SPREAD BY COUGHING.

Examinations were made to determine the number of bacteria thrown from the mouth in ordinary conversation, forced, explosive expiration and in coughing.

A plate exposed for two minutes just in front of the mouth during ordinary conversation showed 235 colonies. A plate exposed for one minute at the distance of five feet during forced expiration showed 105 colonies. A plate exposed for one-half minute at the distance of five feet during explosive expiration showed 192 colonies. A plate exposed at a distance of ten feet showed 35 colonies after five forcible coughs. A plate exposed at a distance of 20 feet showed a development of 23 colonies after ten forcible coughs. These examinations were made in a bathroom which had no ventilation and was practically free from germs, so that a plate exposed for five minutes in quiet showed the development of but three colonies. In other experiments plates were exposed at the distance of five feet and coughed at five times forcibly with one, two and three thicknesses of gauze in front of the mouth. The plate exposed with one thickness of gauze in front of the mouth showed a development of 156 colonies. The plate exposed with two thicknesses in front of the mouth showed a development of 35 colonies, and the plate exposed with three thicknesses in front of the mouth showed a development of 8 colonies.

EXAMINATION OF BACTERIAL CONTENT OF SPECIAL PATHOLOGIC PROCESSES.

Case 1.—A child 3 months old. A swab was taken one day after an operation for hare-lip, before cleansing the mouth. The swab showed the presence of *Staphylococcus pyogenes aureus* and *albus* and the *Micrococcus tetragenus* in large numbers. There were also many non-pathogenic bacteria. After the mouth had been cleansed by washing it out with peroxid of hydrogen in water, 1 part to 3, a swab was taken which showed the *Staphylococcus pyogenes aureus* still present, only in much fewer numbers.

Case 2.—Epithelioma of the lower lip. Swab taken before cleansing showed *Staphylococcus pyogenes aureus* and *albus* and *citreus*, the *Streptococcus pyogenes* and large numbers of putrefactive germs, as well as many non-pathogenic bacteria. After a thorough irrigation with normal salt solution, a swab was taken which showed an absence of the streptococcus; the diminution in number of the other germs, although they were still present in great quantities.

Case 3.—Carcinoma of the upper jaw producing ulceration of the gums. A swab taken before cleansing shows a large number of acid producers, putrefactive bacteria, *Staphylococcus pyogenes aureus, albus* and *citreus*, a number of streptococci and *Micrococcus tetragenus*. Large numbers of fungi of different kinds were also found on this swab. The swab taken after irrigation with normal salt solution showed little improvement in the bacterial content of the mouth.

Case 4.—Epithelioma of the tonsil. Swab taken before cleansing the mouth showed thousands of bacteria of all kinds and shapes. There were present the *Staphylococci pyogenes aureus, albus* and *citreus*, large numbers of *Streptococci pyogenes* and also the pneumococcus. The swab taken after the cleansing with normal salt solution showed a great reduction in the number of germs, but the pus cocci were still present in small numbers. The pneumococcus could not, however, be demonstrated.

Case 5.—Epithelioma of the cheek. Swab taken before cleansing showed a great number of germs of all sizes and shapes and also a great number of fungi, including yeast fungus. The majority of these germs were putrefying bacteria. The pus germs in this case were present, but not so numerous. After an irrigation with one-half gallon of normal salt solution through a fountain syringe, the swab taken showed but few pus cocci, while the putrefactive germs and the fungi were greatly reduced in number.

Case 6.—Sore mouth in child. Swab taken before cleansing showed numerous bacteria, some of which I was unable to identify. There were also large numbers of actively motile bacilli, as well as acid and gas producers. After cleansing with a mild antiseptic, but very few bacteria were found.

Case 7.—Sore throat. Swab taken before cleansing showed numerous staphylococci and long threads of streptococci. The swab taken after gargling for five minutes with a teaspoonful of an antiseptic solution in a small glass of water showed very few pus germs and these seemed innocuous, for they would not grow on culture media.

Case 8.—Acute pharyngitis. Swab taken before cleansing showed a large number of staphylococci, streptococci, also the bacillus of influenza and Friedlander's bacillus. Swab taken after cleansing with antiseptic gargle showed numerous staphylococci and streptococci, but these seemed innocuous, as there was but a single, thin growth of *Staphylococcus pyogenes aureus*.

Case 9.—Canker of the mouth. Swab taken before cleansing showed numerous forms of bacteria, including staphylococci and a large branching fungus. Swab taken after cleansing with peroxid of hydrogen was negative.

Case 10.—Patient had had both tonsils removed several days before examination. Swab taken before cleansing showed great masses of staphylococci and streptococci. The streptococci could not be cultivated. The staphylococci on cultivation proved to be *Staphylococcus pyogenes albus* and *aureus*. Swab taken after cleansing with peroxid of hydrogen showed only a small number of staphylococci which were grown with great difficulty and did not fully regain their power or growth until they were transversed three times onto fresh nutrient agar and incubated at 37 degrees.

Case 11.—Girl, 19 years of age. Patient has consumption and several cavities in one lung. Swab taken before cleansing mouth showed a large mass of bacteria, pus cells and epithelial cells. A simple covered glass smear stained for tubercle bacilli showed them to be present in large numbers. Besides, there were large groups of staphylococci and long threads of streptococci. There were also numerous ordinary forms of bacilli and fungi. The presence of pneumococcus was demonstrated. The swab taken after cleansing the mouth and throat with antiseptic showed staphylococci and streptococci, a few tubercle bacilli together with some pus cells. These germs, however, could not be cultivated.

Case 12.—Girl, aged 10 years. Part of tonsil, soft palate and part of posterior wall of pharynx covered with an adherent, grayish-white membrane. Swab taken before cleansing showed, besides numerous other bacteria, the presence of the bacillus of diphtheria. Swab taken after brushing with peroxid of hydrogen and then cleansing by gargling with a teaspoonfúl of peroxid in a glass of water showed numerous bacteria, including staphylococci and many bacilli, but none of them would grow.

Case 13.—Pyorrhea alveolaris. Swab taken before cleansing showed, besides large numbers of bacteria, most of which were gas and acid producers, the presence of masses of *Staphylococcus pyogenes albus* which was grown in pure culture. Swab taken after cleansing with lysol showed but very little change except in numbers, the bacteria growing quite as well after the cleansing as before.

Case 14.—Swab taken from a cavity in a carious tooth showed a great mass of bacilli and fungi. On cultivation, the bacilli were found to be composed of masses of the proteus group, of which the *Proteus vulgaris* was isolated and the *Bacillus acidi lactici* obtained in pure culture.

Case 15.—Sarcoma of the lower jaw with very little ulceration. Swab taken before cleansing showed, besides masses of pus cells and epithelium, large amounts of disintegrated tissue, also large quantities of bacteria, staphylococci and streptococci. The two latter seemed, however, to have lost a great deal of their virulence, for the putrefying germs soon outstripped them in growth. Swab taken after imperfect cleansing with a carbolized solution still showed the presence of bacteria of different sizes and kinds, but they would not grow, owing probably to the presence of carbolic acid.

Case 16.—First stage of pyorrhea. The swab taken before cleansing showed considerable blood and enormous masses of bacteria of all descriptions. These included *Staphylococcus pyogenes aureus* and *albus*.

Case 17.—This patient had his lower jaw resected two days previously on account of a sarcoma. Swab taken before cleansing showed masses of pus cells and epithelium, also masses of bacteria of all shapes and sizes, together with long threads of fungi. There were *Staphylococcus pyogenes albus*, also *Micrococcus tetragenus* and *Bacillus pyocyaneus*. A swab was taken after cleansing by rinsing with an antiseptic solution, and showed some diminution in the number of microorganisms.

Case 18.—Same patient. Swab taken before cleansing four days after operation showed about the same condition as previous instance, but the swab taken after thoroughly syringing the mouth with peroxid of hydrogen and then washing out with a normal salt solution showed no visible growths.

A study was then made of the comparative number of bacteria present in healthy mouths before and after different methods of antiseptization.

First.—Thoroughly scrubbing the gums with a stiff brush and warm soap water, afterwards rinsing thoroughly with a normal salt solution and rubbing with a sterile gauze from two to five minutes. This will render the mouth sterile in two out of five cases and will reduce the number of germs in the other mouths from thousands to only a few colonies.

Second.—Rinsing the mouth with mild antiseptics, such as boracic acid, thymol, 30 per cent. solution of alcohol or a weak solution of chloroform. It was found that simply rinsing the mouth had little effect on the bacterial content. This seemed to be due in a large measure to the secretions of the mouth, which come rapidly and neutralize the antiseptic used. If the mouth was first scrubbed well and then an antiseptic used, a practically sterile condition was obtained.

Third.—Disinfectants were next tried and the mouth thoroughly rinsed with either 1 per cent. carbolic acid solution or 1 per cent. solution of formaldehyd or a solution 1 to 10,000 bichlorid. After the rinsing, the mouth was scrubbed, using the normal salt solution, the result was found to be practically the same as in Number 1, that is the mouths were rendered practically sterile.

SUMMARY.

In twenty examinations of clean mouths, the greatest number contained staphylococci, 15 *Micrococcus tetragenus* and 6 sarcinæ; of the bacilli, all shapes and sizes, both motile and non-motile, spore-forming and non-spore-forming, and long and short spirillæ were found. Streptococcus was noted in two cases. *Bacillus subtilis*, *Bacillus acidi lactici* and *Bacillus butyricus* were also found.

In one instance *Bacillus prodigiosus* and in three *Bacillus coli communis* were found. In all the cases large numbers of gas and acid producers were found, also several species which could not be identified. In eight of the cases, the pneumococcus was found.

The study of ordinary kept mouths shows more bacteria than in well kept mouths, the putrefactive microorganisms being especially numerous. In two cases of this group the bacillus of influenza was found.

In the third group, the filthy mouths, are found many pathologic processes. In two there was thrush and the organisms of this disease demonstrated. In these filthy mouths millions of bacteria were present and a large number were virulent. The pneumococcus was found in ten of the thirty cases. In the cavities of teeth large numbers of acid producers as well as a great many putrefying bacteria were found.

In the tobacco chewers' mouths, no new organisms were found. In two special pathologic conditions, the *Staphylococcus pyogenes albus* and *aureus*, and the *Streptococcus pyogenes* were found. The *Micrococcus tetragenus* was frequently present. Acid and gas producers, putrefactive bacteria, sarcinæ and fungi were found. Numerous cocci, the yeast fungus, the bacillus of influenza and Friedlander's bacillus were isolated.

In diphtheria and in consumption the germs of these diseases were shown to be present in the mouth.

From the foregoing experiments, it is apparent that the number of micro-organisms, both pyogenic and pathogenic usually present in even healthy mouths is considerable. While in filthy mouths and in those which are the site of pathogenic processes, the number and variety of micro-organisms are greatly increased.

These experiments, though very incomplete, seem to indicate that mechanical means are most to be relied on in an effort to render the mouth sterile, and that the disinfectants, with a possible exception of peroxid of hydrogen, are of only secondary value.

DISCUSSION.

Dr. J. Marshall, San Francisco, said that those having any experience in handling fractures of the jaw, note that about 90 per cent. of all compound fractures of the jaw suppurate. He has operated on those patients without any more disinfecting than washing out the mouth, but has learned from experience that if the mouth is thoroughly cleansed and all salivary deposit removed, and the mouth thoroughly washed with an antiseptic solution, the appliances put in, followed by antiseptic treatment throughout, it is possible to reduce very materially the number of cases in which there is suppuration after the injury. He performs many operations for fractures of the jaw by suturing the jaw, and when he first began he did it with fear and trembling, thinking that in all probability he would get infection through the openings in the bones for the wire sutures. At first he thought that he had, but later found that the trouble originated before that. In most of these cases the patient is not seen for from a few hours to several days after the injury, and infection has already taken place. In cases lasting but twenty-four hours, he has only had 4 or 5 per cent. following compound fracture. He emphasized the fact that if mouths could be kept absolutely clean, dental caries, pyorrhea, inflammations, gingivitis and stomatitis of any kind would be impossible. He does not think we have yet reached the point where we really understand the value of clean mouths. He thinks that if more time were spent teaching patients the value of prophylaxis more good would be done. The work should be begun with children. It would prevent much trouble later on. In his work in the presidio at San Francisco Dr. Marshall found the mouths of the soldiers in a most horrible condition. He had some placards printed and put up in public places "Clean teeth do not decay," and others, "Do not ask the dentist to treat your teeth until you have brushed them." The difference in the condition of the teeth of those men who were there for some time was surprising. Many of them had never owned a tooth brush. After educating them awhile they came with clean mouths and with less disease.

Dr. G. V. I. Brown, Milwaukee, said that in the first place it is an interesting fact, known perhaps, but not considered sufficiently, that if one had been performing a surgical operation in those several mouths and could not or did not use antiseptics, he would probably, so far as pus germs are concerned, have better results in the dirty mouth than in the clean one. With Dr. Brown it is a grave question sometimes how much or how little good antiseptic measures do. Until someone can demonstrate that it is not valuable to disinfect he, of course, will continue on that line, but if those who have demonstrated that there are properties in this saliva or this mixed secretion that have a beneficial action in health, then of course it must be admitted that by the dilution of that fluid injury is done rather than benefit. Dr. Brown made some tests years ago in the following manner: Taking cultures from mouths that were not disinfected in any way—so-called dirty mouths—he, of course, got a great deal of bacteria. Disinfecting with bichlorid for a considerable time in some instances gave practically no result in cultures taken. Following this a solution of carbolic acid was used, stronger than he should want to use for operative purposes, and some essential oil, and after all this he was able to get growths from cultures taken from the same mouth by scraping away some of the superficial cells; he found living germs underneath. He found that he could get good results by using peroxid of hydrogen, which is also a germicide, but is superficial. By using this and then a germicide, he got better results. Mechanical cleaning, H_2O_2, and then a germicide gives the very best results. It is a foregone conclusion that a state of pure asepsis cannot be reached. Even if it were, at any moment it is likely to be disturbed by secretions of one kind or another. The only thing left to do, therefore, is to use as much mechanical force in cleansing as possible, and then to depend on the frequent use of dilute solutions of antiseptics and germicides.

Dr. M. I. Schamberg, Philadelphia, said that this paper should be a valuable adjunct to medical as well as to dental literature for the reason that it will recall the general surgeon to the urgent need for protecting the patient in laparotomies, brain surgery, etc., from infection from the mouth. Careful operators, who have spent much time in preliminary preparations are frequently seen to stand over a patient with open abdomen and describe the conditions there, and it is quite likely that they frequently cause infections with germs from the mouth.

Dr. M. L. Rhein, New York, said that Dr. Levings' views differ materially from our clinical experience with tobacco mouth. It has always appeared to Dr. Rhein that the consensus of views is that a tobacco mouth, other things being equal, will present a decidedly smaller number of colonies on examination than another mouth. It is known that however sterile the oral cavity is made the durability of that condition is extremely limited. The one practical point to Dr. Rhein has always been that with the average practitioner, whether he be distinctly a stomatologist or a medical man, failure in this respect is due to a lack of cleanliness. The advantage of a method approaching a condition of sterility as closely as possible is of undoubted value, and the whole point resolves itself into a question of time. The practitioner has not the time to devote to this purpose.

Dr. G. V. I. Brown, Milwaukee, declared that the value of experiments with regard to infection from mouths covered with gauze is far reaching. In clinics in some of the best institutions in this country, surgeons and nurses with rubber gloves may be seen and every possible precaution against infection is taken, and the surgeon, perhaps, may have a beard or moustache uncovered; at any rate his mouth has no special cleaning, and yet he will discuss the cause and talk right over the open abdomen. Some surgeons are more particular and do cover their mouths. The piece of gauze already prepared to drop over the mouth is advisable. Dr. Brown covers his face with several thicknesses of gauze. He thinks that this is a very important point and a great credit to the section.

Dr. John Marshall, San Francisco, stated that for the last few years in most of the large hospitals these precautions have been followed, the surgeons covered their mouths not only with one or two thicknesses, but with four or five, particularly when performing laparotomies.

Dr. Vida A. Latham, Chicago, asked Dr. Levings how he overcame the tremendous ingrowth of the sacromycetes group. Dr. Latham has just finished a number of experiments in the oral cavity and said that she has been practically overwhelmed with the yeast growth, and that the yeast organism is a prominent organism in the mouth. She also asked Dr. Levings what position he gives to the *B. coli communis*, and whether he is inclined to class it as an allied form to the streptococcus. It has been shown that the coli communis is allied to the pus group. If this is so, this is a cause of peritonitis, cellulitis, etc.

Dr. H. P. Carlton, San Francisco, asked what is the use of having training schools for dental nurses if there are no medical dentists.

Dr. A. H. Levings stated his belief that the bacteriology of the mouth is better understood, as it should be, by the dentist than by the physician, and that the former is a better judge of the bacteriologic contents of the mouth than are physicians ordinarily. He is not aware of any experiments that bear out the statement that the tobacco mouth has fewer organisms than any other mouth. He believes that these arguments are advanced by persons who use tobacco. He classes *B. coli communis* simply as a pus germ—as a pyogenic germ—one of the germs that are most frequently to be dealt with in the intestinal canal and in the abdomen, and certainly it is largely a pus germ. It is the cause of nearly all the pus abscesses in the abdomen. Dr. Levings has found it in many cases in pure culture in abscesses about the appendix, intestinal canal and gall bladder. The yeast germ, he believes, is not found in sufficient quantity to interfere with investigations. If experiments prove anything, they prove that all mouths are filthy, in the sense that they contain pyogenic or pus-producing micro-organisms. In order to render a mouth reasonably aseptic, it is necessary to do something more than gargle or wash; it must be scrubbed out, and on this point he disagreed with Dr. Brown that after rinsing and gargling the mouth masses of bacteria can be scrubbed off from the gums. These particles of foreign materials containing the micro-organisms must be detached by mechanical means, and after that the mouth can be made aseptic and can be kept practically clean by the use of antiseptics. In the education of the dentist, Dr. Levings believes that there are many branches of medicine which are practically useless, and that the prospective dentist is the only individual to be considered. What is good for the dentist is going to be good for the public. When the dentist is properly educated, he is in a position where he can deal most satisfactorily with the public.

THE ORAL MANIFESTATIONS OF DIABETES MELLITUS.[*]

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Within the last twenty-five years, a vast amount of literature has been produced concerning the etiology, pathology and therapeutics of pyorrhea alveolaris, and, with it all, to-day we are about as far away from its true etiology as in the days of Celsus, who probably was the first medical writer to call attention to this ailment. To J. M. Riggs of Hartford, Conn., American dentistry is indebted for first calling the attention of the profession to this disease in 1869, although it must have been recognized by him as early as 1844. Rehwinkel is usually quoted as being the first (1877) to use the term pyorrhea alveolaris, a name which he borrowed from Albrecht of Berlin. This term, however, is of French origin and is employed for the first time in an article published by Toirac-Desirabode[1] in 1839, in which he speaks of the disease as *pyorrhea alveolodentaire*. Fauchard, in 1746, described this disease as a "kind of scurvy" and Jourdain (1778) seemed to be of the same opinion, although he more particularly emphasized the fact that a pyogenic destruction of the gingivæ and alveoli is concomitant with the other symptoms. Ever since innumerable names have been suggested by the various writers, usually christening the ailment according to their conception, with the most prominent symptoms, such as "cemento-periostitis" (Magitot), "arthro-dental gingivitis" (Galippe), "gingivitis expulsiva" (Marechal de Calvi), "caries alveolaris" (Essig), "interstitial gingivitis" (Talbot[2]), "*atrophia alveolaris præcox*" (Baume), "phagedenic pericementitis" (Black), "syphilitic locolosis alveolaris" (Curtis), "caries alveolaris idiopathica" (Greve[3]), "caries alveolaris specifica" (Arkoevy[4]), "blennorrhea gingivæ," etc., etc. At the last Union meeting of the American Dental Societies of Europe, held at Basel in December, 1904, W. J. Younker of Paris suggested these two names: "Alveolitis calcophagia" and "alveolitis calcica."

For convenience sake, we may define pyorrhea alveolaris as a chronic destructive inflammation of the pericementum, with more or less necrosis of the alveolus of the affected tooth. The causative factors of the disease, according to Miller, may be classified as follows: Predisposing causes, local disturbances, and bacterial infection. The predisposing causes are such factors which lessen the resistancy of the tissues to injuries, viz.: constitutional or local diseases, metabolic disturbances, tuberculosis, rachitis, scorbutus, syphilis, locomotor ataxia, chronic dyspepsia, malaria, diabetes mellitus, metal intoxications, and other disturbances. Some of these enumerated diseases do not produce definite symptoms in the oral cavity; others, again, manifest themselves in the causation of a distinct form of pyorrhea alveolaris, which, according to some clinicians, is classed as a prodromal sign of the primary disease. This seems to be especially true of diabetes mellitus.

Diabetes mellitus is a disease of impaired nutrition. Faulty metabolism, resulting from the materially reduced power of the body to burn up grape sugar, is the causative factor. Postmortem examination of diabetics usually shows very few or no morbid changes of the organs, with the exception of the brain. The sequence of this inhibition of chemical changes in the body is the presence of sugar in the blood of the diabetic which results from the diminished destruction of the sugar, and, as a consequence of this incomplete oxidation, oxybutyric acid, aceto-acetic acid and acetone are formed, which, with the sugar, are excreted with the urine. The nervous system being the controlling factor of the chemical changes in the muscle tissue, it seems proper to suspect certain disturbances which originate in the central nervous system as the primary factor of diabetes mellitus, the more so as certain pathologic signs point in this direction. The fact is verified by performing the classical experiment of Claude Bernard, which consists in puncturing the floor of the fourth ventricle mid-way between the auditory and the pneumogastric nerves. Thus, an artificial diabetes, which is to say, passage of large quantities of sugar with the urine, is produced which may last for several hours. It is a long and well-known fact that pathologic disturbances of the pancreas are responsible for the production of diabetes; von Mering and Minkowski operated on more than fifty dogs, and, when the complete extirpation of the pancreas had been successfully carried out and the animals had survived more than twenty-four hours, well-marked and severe diabetes was produced. If small pieces of the gland remained, however, no symptoms of diabetes are manifested.

According to our present conception of oral pathology, we may take this axiom for granted: There is no pyorrhea alveolaris without micro-organism. The normal oral cavity is inhabited by a rich flora of bacteria, both pathogenic and non-pathogenic. The great resistancy of the very vascular tissues to injuries holds the bacteria at a rather low ebb of virulence. According to Fluegge, however, the slightest interference with this normal resistancy, for instance, a simple pharyngeal catarrh, affords a ready field of attack and the pathogenic germs become extremely virulent. No specific micro-organism has, so far, been isolated as the true causative factor of pyorrhea alveolaris, although Galippe claims to have found and isolated two organisms. Pyorrhea results from a mixed infection; as shown by Goadby, however, the true pus-producing organism, viz., the staphylococcus aureus and albus are found only in about 10 per cent. of all the bacilli present. As before stated, these micro-organisms must necessarily find a *locus minoris resistentiæ* in the tissues of the oral cavity before they can obtain a firm foothold.

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[*] Read in the Section on Stomatology of the American Medical Association, at the Fifty-sixth Annual Session, July, 1905.

[1] Toirac-Desirabode: Gazette des Hôpitaux, 1839.

[2] Talbot: Interstitial Gingivitis.

[3] Greve: "Caries Alveolaris Idiopathica." Oesterreich. ung. Vierteljahrsschrift f. Zahnheilkunde, 1904.

[4] Arkoevy: Caries Alvéolaris Specifica Fulminans. Stomatologiai Kozlony, 1905.

It is a well-known fact that diabetes mellitus lessens the resistancy of all the tissues of the body; diabetic gangrene and a tendency to form carbuncles are ample illustrations of this. So-called dry sockets, viz., ill-healing wounds resulting from the extraction of teeth, are frequently traced to existing diabetes. According to Naunyn, the pronounced tendency to local infection in diabetics may be partly explained by the ever-present sugar in the tissues, thus furnishing rich food to certain forms of schizomycetes. This may help to explain why thrush is so frequently seen in the mouths of diabetics. The best authorities on diabetes mellitus, such men as Kuelz, von Noorden,[5] Frerichs, Bunge,[6] Naunyn, etc., agree that no sugar is found in the saliva; however, a distinct acid reaction is usually observed in the oral fluids. This very acidity, to a large extent, is responsible for the increased sensitiveness about the necks of the teeth, which is usually a forerunner of rapid decay about this region. The circular ligament becomes swelled and livid, it loses its hold on the tooth, and thus opens a ready gateway to the micro-organisms. The formation of pus pockets follows and concomitant destruction of the peridental membrane and necrosis of the alveolus results, with final loss of the tooth. The teeth of the upper arch usually are attacked in this manner prior to the lower teeth.

According to Arkoevy,[4] a distinct separation of the two upper centrals occurs which, as a pathognomic symptom, he has termed *diastema pathologicum*. The articulation of the arch is destroyed, and as a consequence of the force which is produced by the more firmer teeth of the mandible, in their curve of motion against those of the maxilla, the latter readily give and more or less prognatism results. The percussion fremitus of Landgraf,[7] which is observed by placing the finger over the end of the tooth root and tapping the tooth, forms a valuable diagnostic means of determining the progress of destruction of the alveolar plates.

The very rapid formation of calcareous deposits about the necks of the teeth in diabetics is another important diagnostic symptom. This "tartar" is usually of a light yellow color and rather soft to the touch. It is not confined to a group of teeth, but forms indiscriminately all over the crowns. The rapid formation may thus be partly explained: The saturation of the body with acids, according to Naunyn, calls forth an increased neutralization by the alkaline earths of the tissues which are largely held in solution by carbonic acid and poured out by the saliva. The CO_2 becomes liberated in the mouth and the precipitated lime salts are deposited about the teeth. The tongue of the diabetic is usually found thick, of a red color, and coated, showing the imprints of the teeth; the papillæ are enlarged. The mucous lining of the mouth shows a livid color resulting from the hyperacidity of the blood; the mouth is usually extremely dry. The typical odor arising from the breath of the diabetic is an important clinical symptom of the disease and is readily observed by the oral specialists. It is a peculiar chloroform-like odor, resembling somewhat sweet cider. This odor is due to the acetone compounds formed in the body. Of course, the most important diagnostic sign of diabetes is the presence of sugar in the urine.

A few therapeutic suggestions added to the summary of oral symptoms of diabetes mellitus may not be amiss. For general treatment the patient, of course, should be under close observation of the physician. The imbibing of large quantities of alkaline waters, such as Vichy, Carlsbad or Neuenahr, is recommended by the best authorities. Strict dieting is pre-eminent. von Noorden's "oatmeal cure" is much lauded by some clinicians. Very recently O. Conheim published encouraging results obtained by administering an extract of the pancreas; this report, however, is too early and too incomplete to be of practical value. The local therapy is the usual routine treatment, removal of all deposits, destruction of the pus pockets, fixation of the loose teeth, correction of malocclusion, and general prophylaxis. As long as the primary disease is present, however, comparatively little can be expected of the local treatment alone.

Special Article

IMMUNITY.

CHAPTER XXII.

TYPHOID.

Eberth first saw *Bacillus typhosus* in microscopic preparations of the mesenteric lymph glands and spleen of a typhoid corpse, in 1888. Koch also observed it at about the same time, and stained it in the intestinal wall, spleen, liver and kidney. It was obtained in pure culture by Gaffky in 1884.

The organism is rod-shaped, 0.5 to 0.8 by from 1 to 3 microns in dimensions, with nothing characteristic in its morphology. It possesses from ten to twelve flagellæ situated at the end and on the sides and is actively motile under suitable conditions. It forms no spores, is readily cultivated on many media, in which it sometimes forms long threads, and it is not stained by the method of Gram. The maximum growth occurs at the temperature of the body; growth is practically inhibited at from 9 to 15 degrees C.

Intestinal Groups of Bacilli.

The bacillus is one of the rather numerous "intestinal group" of organisms, certain members of which are similar in morphologic and cultural characteristics, and which can be differentiated only by means of special culture manipulations, by animal experiments, or by the agglutinating and bactericidal action of specific immune serum.[1] Several tests are often necessary for positive differentiation. The typhoid bacillus is a feeble producer of acid and ferments none of the sugars with visible gas formation. The colon bacillus forms acid vigorously and ferments various sugars with the production of gas. The paratyphoid bacilli are very similar to that of typhoid but differ in that they ferment dextrose with the formation of gas. The dysentery bacillus from the culture standpoint is almost identical with the typhoid bacillus, showing only the rather uncertain difference of a terminal alkalinity in milk; even this is not distinctive, because typhoid bacilli are sometimes met which produce a similar reaction. The *Bacillus enteritidis* ferments dextrose with the production of gas. The *Bacillus alcaligenes* always produces an alkaline reaction in milk. These points are mentioned only to illustrate the principles of culture differentiation of organisms which are similar in many respects. Even those which are most similar in culture media can be distinguished by properly performed agglutination or bactericidal tests with the corresponding immune serums. Before bacteriologic tecanic was so well developed at it is to-day, the typhoid bacillus, doubtless, was confused with these organisms in many instances. It is in fact less than five years since the organism of paratyphoid fever was identified as distinct from that of typhoid, in consequence of which the recognition of a new disease was possible.

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[5] von Noorden: Autointoxication.

[6] Bunge: Physiological and Pathological Chemistry.

[7] Landgraf: "Kritische Betrachtungen über Pyorrhoea Alveolaris." Deut. Monat. f. Zahnheilkunde, 1903. "Die Initialsymptome der Alveolarpyorrhea." Ibid., 1905.

[1] Of this group the bacillus of dysentery, paratyphoid bacillus, *Bacillus enteritidis* of Gärtner, colon bacillus and *Bacillus alcaligenes*, in addition to the typhoid bacillus, are the most important because of their similar morphologic and cultural properties and the pathogenicity of certain of them.

Habit of B. Typhosus.

So far as known, the typhoid bacillus does not flourish outside the body and its occurrence in nature is dependent on the distribution of the infected excretions of the diseased. Nevertheless, its resistance is considerable and it remains alive and virulent in water, earth, etc., for varying lengths of time according to the nature of its surroundings. It has been found to live for periods of from 2 to 4 weeks to 2 or 3 months in water, from 3 to 4 months in milk, from 3 to 5 months in surface earth, and from 11 to 16 months in sterilized earth; 100 days in ice, from 12 to 30 days in oysters, from 50 to 80 days when dried on clothing, for 3 months in typhoid feces, for 96 days in the dead body of an experiment animal. Its vitality may be retained for many months in a dried condition. When in water or moist earth which is heavily infected with saprophytic organisms, its life is shortened, and it is killed in a relatively short time in the presence of sunlight.

The organism has been cultivated from the earth and infected water, and from the feces, urine, blood, rose-spots and the various organs of typhoid patients. In many instances in which an epidemic has certainly been caused by an infected water supply attempts to cultivate the bacillus from the water have failed. The organisms may not have been included in the samples which were analyzed, or what is equally probable in certain instances, they have died out in the water by the time the disease was so widespread as to be considered epidemic.

Typhoid Epidemics.

Typhoid fever may become epidemic on a large scale in two ways: First, by water infection and second, by contact infection. When the epidemic has as its source infection of a common water supply there is something characteristic about the explosive-like suddenness with which dozens or even hundreds of individuals are stricken within a comparatively short period. This method of infection concerns large villages and cities, principally, the water for which is commonly taken from streams, small lakes or reservoirs. An ill-constructed out-house, or discharges thrown on the ground in the basin of the stream or reservoir are historic conditions which with the first rain or the melting of the snow have made possible the contamination of the water supply of a community. Miniature epidemics have been caused among groups of families which obtained their water in common from wells which chanced to become infected; in one instance typhoid stools had been thrown on the ground adjacent to the well.

There are authentic examples of limited transmission through milk which had been infected by the use of contaminated water in washing the cans, or by individuals in handling the milk. Fruit and vegetables may be infected by washing with contaminated water. It is strongly suspected that oysters infected from sewage have caused more or less extensive outbreaks of the disease.

An epidemic set in motion by infected drinking water or other means may be aggravated and generally prolonged by the occurrence of contact infections (*indirect contact*). The hands of the nurse, physician or attendant may become contaminated from contact with the stools, urine, soiled linen or skin of the patient, and the organisms, subsequently may be transferred to food, drinking water, or in other accidental ways may reach the mouth. Each new case is a fresh focus from which infection may be carried to others. The chances of milk and food infection become greater as the cases multiply. When the discharges are not disinfected or are improperly disposed of rather extensive soil or house infection may occur and the possibility of direct or indirect transmission by germladen dust becomes of importance. Dust infection from dried urine or feces may occur. Drop infection from urine, water, or the sputum of the patient is theoretically possible but would seem to be of minor significance. Flies may carry the organisms from open vaults or cesspools and deposit them on food or in drinking water. The importance of this has been appreciated in relation to epidemics in military camps. Typhoid bacilli have been cultivated from flies which were taken from the vicinity of infected material.

The Infection Atruni.

The micro-organisms gain access to the body through the lymphoid tissue of the intestinal tract (Peyer's patches and the solitary follicles). Rarely it is possible that other infection atria may be utilized. Primary infection of the lungs through inhalation of infected dust has frequently been mentioned as a possibility, but its occurrence is not definitely established. In this instance a typhoid bacillemia would precede intestinal infection or a condition of typhoid septicemia without intestinal lesions would stand as a possibility. It would seem essential for the occurrence of either of these conditions that some local lesion exist from which organisms could constantly be supplied to the blood. Neufeld doubts the ability of the organism to proliferate in the blood stream as in true septicemia because of the strong bactericidal power of the blood, and considers that infection takes place through the intestines even in cases of "typhoid without intestinal lesions."

Incubation and Variations in Virulence.

The incubation period is subject to considerable variations. In one instance in which 500 persons were exposed to infection from a well 13.5 per cent. developed the disease. Of these, 62 per cent. showed symptoms in from 20 to 25 days, 2 per cent in from 14 to 20 days, and 2 per cent. later than 30 days.

Typhoid bacilli cultivated from different cases vary greatly in their virulence. As previously stated, the pathogenic constituents of the organism reside in the bacterial protoplasm and are not excreted in soluble form. Toxic substances, it is true, may be obtained in solution by the autolytic digestion of cultures, extraction of ground-up organisms, or the cell juice may be obtained under high pressure, but it is currently believed that such preparations represent nothing more than the endotoxin which, through the disintegration of the cells, has gone into solution. Up to the present time, immunization with none of these preparations has resulted in the production of an antitoxic serum of accepted value. Certain French authors speak of a true soluble toxin.

Following the development of intestinal lesions the bacilli reach the circulation by way of the lymphatics, and through the action of the bacterial constituents of the blood (amboceptor-complement complex and possibly leucocytes) they are killed and dissolve in large quantities. It is now generally believed that only through the disintegration of the bacterial cells are their toxic constituents thrown into solution in the body, a condition which is necessary in order that the tissue be injured. Infection of the blood stream with living organisms, in the early stages of the disease and preceding relapses, occurs in such a large percentage of the cases that it has come to be recognized as more or less characteristic.

This promises to be an important point from the standpoint of early diagnosis, for they appear in the blood in ad-

A Point in Diagnosis.

vance of the formation of agglutinins; that is to say, the diagnosis may be established by culture methods before the agglutination reaction can be obtained. From 1 to 5 c.c. of blood are drawn from the median vein of the arm and planted into from 30 to 80 c.c. of suitable bouillon, which is then incubated for twenty-four hours and certain quantities of it plated out, or the bouillon culture may be used direct for the agglutination reaction with a known typhoid serum. Inasmuch as typhoid bacilli when freshly cultivated sometimes resist agglutination, it is necessary to supplant the agglutination reaction by the ordinary cultural tests. After from the tenth to the fourteenth day the organisms are commonly not to be cultivated from the blood; it is not improbable that the bactericidal substances of the blood have so increased by this time that the organisms are killed rapidly after reaching the circulation.

As stated previously, they are also found in the various organs, especially in the lymph glands, spleen and bone-marrow in fatal cases. In from one-fourth to one-third of the cases, in the third week, or during convalescence, the urine becomes more or less heavily infected with the bacilli. They may persist in the urine for many weeks after the subsidence of acute symptoms, with little to call the attention of the patient to the condition. Because of its frequent occurrence during convalescence, the process is not to be considered as one of excretion of the organisms from the circulation, but it seems more likely that they arise from metastatic foci in the kidneys—foci which were deposited perhaps at the time similar metastases occurred in the skin to cause the appearance of the rose spots. (Kanjajeff). More than 100,000,000 bacilli per c.c. may be present. The condition may be accompanied by cystitis, varying in degree from mild to severe.

Localization of the Bacilli.

Neufeld claims that the organisms exist in the tissue fluids of the rose spots, and that if they reached the skin in the first instance as metastases in the blood stream they soon become extravascular. They may be cultivated from the rose spots by inoculating media with scrapings from the surface; it is not necessary that the vessels be injured. The rose spot is due to the congestion of the vessels which surround the focus.

The cultivation of the bacilli from the spleen during life by the aspiration of blood from the organ by means of a syringe is not practiced because of the dangers involved.

The gall bladder is infected with considerable regularity during typhoid, and the organisms may proliferate in this situation for years. It has been suggested that reinfection may be caused by the passage of organisms from the gall bladder to the intestines. Typhoid bacilli have been found imbedded in the nuclei of gallstones.

Pneumonia, which develops as a complication of the disease, is commonly caused by other organisms, occasionally by mixed infection with the typhoid bacillus, and rarely by the latter alone. The organism has been found in the bronchial secretions. Serous or purulent pleuritis may be caused by the typhoid bacillus.

Bone lesions (necrosis, abcesses, periostitis), particularly in the lower extremities or in the vertebræ, occur frequently during convalescence, or rarely one or more years later. They may, but more commonly do not, suppurate. The *"Spondilitis typhosa"* of Quincke is thought to be accompanied by compression of the nerve roots by the serous infiltrate of the periosteum. It is thought that true myelitis may accompany, or follow typhoid, the cause being either toxic, or depending on a previous metastatic infection with the organism. Neuritis although the nervous system is characteristically the seat of is not uncommon. True typhoid meningitis is probably rare, intoxication. The typhoid bacillus is a facultative pyogenic organism and may cause abscesses without the aid of other organisms. In purulent lesions, however, mixed infection with the ordinary pyogenic organisms is commonly found.

From the above it would seem that the lesions which may develop during typhoid to a large extent are dependent on the distribution of the organisms, in contrast to the conditions in diphtheria and tetanus. Nevertheless, it appears that the lymphoid tissue and the central nervous system have a special affinity for the toxic constituents of the organisms. In the beginning, the intestinal infection is rather general, being characterized by diffuse hyperemia, a catarrhal condition of the surface and occasionally by minute hemorrhages into the mucous membrane. Very soon, however, their preference for the lymphoid tissue becomes manifest; that this preference depends on anatomic conditions is perhaps not definitely settled, but seems improbable. The vibrio of the cholera under similar conditions shows no such preference for the lymphoid patches.

(To be continued.)

Clinical Report

RECTO-UTERINE FISTULA.*

L. H. BERND, M.D.

PHILADELPHIA.

Patient.—Mrs. S., aged 33, married, housewife, was referred to me at the Italian Hospital, April 5, 1905, with the following history:

History.—Patient has given birth to eight children, three still living, five miscarriages; otherwise she never had any trouble. Her present trouble started five weeks ago, when she aborted a three months fetus. She was curetted by her family physician at that time.

Examination.—The woman is very pale and thin, complains of headache, backache, and a feeling of uneasiness in the lower part of the pelvis; also of a bloody fetid discharge. The perinneum is lacerated through the external sphincter. She has a slight cystocele and a large rectocele. There was no visible discharge, the patient having taken a douche. A unilateral laceration of the cervix could be felt, and the uterus seemed slightly adherent to the rectum. The fundus was enlarged and soft; the tubes and ovaries were in good shape and not markedly tender. Through the speculum a peculiar blood-stained discharge was seen, which had a putrid odor. Temperature was 99, pulse 88.

Treatment.—The patient was prepared for operation in the usual way. As she was being put on the table the nurse informed me that the fluid from the enema came out through the vagina. Careful search, under ether, elicited no opening between the vagina and rectum. An enema of milk was then given. The milk came out through the cervix. A sound passed into the uterus came in contact with the finger in the rectum through a small opening about a half inch above the internal os. A very gentle curettage was done and the uterus was packed with iodoform gauze. The cervix and perineum were then repaired. The packing was left in forty-eight hours. The bowels were moved on the sixth day by an oil enema. The recovery was uneventful, and the patient menstruated on April 18.

Subsequent History.—June 15, 1905, the patient came in and seemed well, except for an adhesion of the uterus to the rectum. She believed herself pregnant, about two weeks.

Remarks.—The case is rather unique. Rectouterine fistulæ are not mentioned in several of the text-books on gynecology. Guilliam mentions the possibility of such cases.

Carcinoma sometimes causes these fistulæ, also tuberculosis. In this case it was probably due to trauma, and, as the fistula was so low, the danger of infecting the peritoneum was greatly decreased. It is possible that the uterus was adherent from a syphilitic condition and that the curette had slipped through at that point when she was curetted by the family physician. My idea of syphilis in this case is due to her history and the syphilitic condition of one of her children. The husband also has rather a suspicious-looking nose, while he denies most emphatically any disease of that kind. It would be interesting to know the further history of this patient and whether or not the pregnancy continued to term, but she has left Philadelphia and I am unable to secure further data.

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* Reported to Philadelphia County Medical Society, 1905.

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INTRACELLULAR FERMENTS AS CATALYZERS.

A new insight has been gained through research in physiologic chemistry in the conception of the catalytic nature of intracellular ferments. By a contact substance chemists understand a substance which, by virtue of its presence (and without itself, or in the form of derivatives, appearing in the end-products of reactions), either initiates chemical reactions which otherwise would not occur (chemical "inoculation" or "infection") or accelerates or retards the speed of spontaneous reactions (catalysis). Thus in inorganic chemistry, as everyone remembers, the mixture of manganese dioxid with potassium chlorate accelerates the rate of oxygen liberation and the presence of platinum quickens the burning of hydrogen gas in oxygen at relatively low temperatures. In organic chemistry, ferrous sulphate, by its presence, hastens the oxidation of glycerin by hydrogen peroxid. These are samples of catalysis. It seems probable that for every chemical reaction substances exist which alter its speed. The search for these catalyzers offers a most inviting field for study.

The exact chemical constitution of the intracellular ferments is not known, but this does not hinder the investigation of their catalytic effect. Indeed, in pure chemistry an exact knowledge of the chemical nature of a catalyzer has rarely thrown any light on the character of a catalytic reaction. That such knowledge may be of great importance later is conceivable, but it need not make us pessimistic because we are now ignorant in this particular respect, and see no likelihood of enlightenment soon; there is enough to do at present in studying the relations of catalytic agents of unknown structure to the reactions they influence.

Physiologic chemists are now busy isolating the intracellular ferments from the cells of various organs. One organ may contain many different ferments; the liver, for example, contains more than a dozen of these substances. On the other hand, the same ferment may be present in many different organs, the same oxidizing ferments (aldehydase, for instance,) have been demonstrated in the lymph glands, spleen, thymus, lungs, brain, adrenals, testicles and kidneys.

The isolation of the ferments is by no means easy. Histologic methods are of no avail for the purpose; it is rather the method of the pharmaceutical chemist which has to be resorted to. Just as the latter, seeking the active principle of a vegetable drug, prepares various "fractions" by precipitation, extraction, etc., and tests each fraction to find out in which the active principle is to be found, so the ferment chemist goes to work with an animal organ which is known to be capable of carrying on a definite chemical operation. Most ferments can be obtained from minced organs by extraction with water, in which they form suspensions or colloidal solutions rather than true solutions. To these aqueous suspensions various precipitating agents are added. One ferment goes down with one kind of precipitate, another with another. No general rule can be predicated for the isolation; the ferment chemist has to try a whole series of reagents until he strikes the right one. After isolating the ferment, its quantitative activity has to be determined, and here the methods of physical chemistry have to be employed. This is why the investigator of ferment activity needs to be familiar with chemical mechanics, chemical statics and chemical kinetics—in other words, with the laws governing the phenomena of equilibrium and the velocity of reactions, and with thermodynamics. The effects of temperature, of poisons, etc., on the ferment follows on the simple study of reaction velocity.

The studies of the ferment chemist promise to be of the greatest significance for physiology and pathology. The whole field of internal assimilation comes within their scope, as do the problems of intermediary metabolism. Moreover, for the pathology of the so-called constitutional diseases and perhaps also for the solution of the problems of immunity, the chemistry of ferments and the study of catalytic reactions hold out great hope. Though the details of the methods are too complex to be grasped, perhaps, by the rank and file of medical men, physicians can not fail to be interested in gaining an intelligent understanding of the main points at issue; they will follow the results of research workers competent to investigate these problems with sympathy and expectation.

THE CAUSE OF WHOOPING COUGH.

The practical application by Widal of the principle that in bacterial diseases substances form in the blood which will agglutinate the bacteria causing the disease has led to important additions to the methods of bacterial diagnosis, and has rendered more certain, in some instances, the association of a given bacterium with a given disease. Notwithstanding the large number of diseases now held to be of bacterial origin, the number in which absolute proof of the relation of a given organism to a given disease has been brought forward is relatively small. If we accept Koch's postulates as a standard, and this is generally done by bacteriologists, there are many diseases now held to be bacterial in which absolute proof of this contention is lacking, and this is particularly the case in human diseases not transmissible to animals. It is just such diseases that the agglutination test is of the greatest value.

Among the diseases long considered bacterial, but never definitely proved to be so is whooping cough. For nearly twenty years various observers have described various bacteria in this condition, and since 1897, when Czeplewski and Hensel, and, independently, Koplik, described small-poled bacilli in the sputum, there has been a very close resemblance among the various organisms described. This latter fact made it appear more probable that the real causal agent had been found than if bacteria differing widely in their characteristics had been observed. Most of the observers, even in recent years, have failed to test the agglutinating power of the patient's blood on the organism which they considered the cause of the disease, and this fault has recently been remedied by Wollstein,[1] who has carefully investigated thirty cases. The studies of Wollstein show that if proper precautions in collecting and washing the sputum are taken the same organism can be isolated from practically all developed cases of whooping cough during the first seven or eight weeks of the disease. Before the whoop appears it may be impossible to isolate the bacteria, but after the diagnosis is no longer in doubt the isolation is not attended with great difficulty. The organism which Dr. Wollstein describes tallies very closely with those observed in recent years by the authors previously mentioned, and various slight discrepancies, hitherto puzzling, are doubtless due to improper technic, to the fact that the organism can only be cultivated on hemoglobin containing media, and to the occasional occurrence of similar organisms in healthy individuals. The pertussis bacillus resembles quite closely the influenza bacillus, though somewhat larger. It shows the same cultural peculiarities, and in agglutination tests there is evidence that the two organisms, while different, belong to the same group.

The association of one organism with whooping cough suggests, of course, the possibility that a serum treatment may be available; in fact, such a treatment has been described. As long ago as 1902 Leuriaux[2] gave an account of the successful treatment of sixty-six patients by an antitoxic serum. In view of the fact that the agglutinating power of the blood of various animals can be increased by inoculation with the pertussis bacillus, a serum therapy would seem to be one of the possibilities of the future.

THE PROTEOLYTIC INTRACELLULAR FERMENTS AND AUTOLYSIS.

It has been known for the last 15 years that animal tissues possess the power to break up the albumin molecule, independently of the action of the pepsin in the gastric juice and of the trypsin of the pancreatic juice. Salkowski, in 1890, proved that certain ferments in the liver and in the muscles, substances which could be extracted with water, are able to split up albumins with formation among other substances, of the two amino-acids—leucin and tyrosin. Salkowski spoke of the process as autodigestion, but the name autolysis, later proposed by Jacoby, is that which has been generally accepted. The latter author has been able to isolate the autolytic ferment by means of fractional outsalting. It has since been shown to exist in a whole series of organs, including the spleen, lymph glands, kidneys, lungs, stomach and thymus.

In order to demonstrate autolysis, the organ need not be washed; if the whole liver, or a portion of it, be removed from the body, under aseptic precautions, and so kept in the thermostat, intense autolysis results. This makes it seem probable that the autolytic ferment exists and is active during life within certain limits. Just what part these proteolytic catalytic agents exercise in intermediary metabolism, however, is not yet known. Proteolytic ferments have also been demonstrated in placental autolysis (Matthes) and in carcinoma tissue (Petry). They are increased in the liver in phosphorus poisoning (Jacoby) and may be responsible for the proteolysis of that organ which gives rise to the appearance of leucin, tyrosin, glycocoll, and phenylalamin, which are now known to be excreted in the urine during phosphorus intoxication. Interesting to clinical men is the fact that the pneumonic exudate, during the stage of resolution, is dissolved up gradually, owing to the action of a proteolytic ferment, resident within the cells themselves. Obviously, therefore, autolysis plays an important rôle in the cure of pneumonia (Müller and Simon). When pus breaks down in abscesses, the disintegration is due there also to an autolytic ferment (achalme).

The proteolysis carried on by these autolytic ferments is a hydrolytic cleavage. The chains of amino-acids of which the albumin molecules are built are split asunder owing to the addition of the constituents of water, a hydrogen atom going to one amino-acid molecule and hydroxyl going to the molecule next adjacent. This mode of digestion resembles what happens when proteids are split by pepsin and trypsin. The processes are not identical, however, whether or not the same ferments which split the albumin molecule into amino-acids can also, under other conditions, synthesize amino-acids into albumin, i. e., whether or not the reaction is reversible, as appears to be the case with lipose, the fat-splitting and fat synthesizing ferment, has not yet been ascertained.

PASSING OF PATHOGNOMONIC SYMPTOMS.

It seems very probable that the feature of the session of the American Medical Association at Portland, for which it will go down into history will be its clearing of the field of medical thought of a good deal of its trust in so-called pathognomonic symptoms. While it has been recognized for many years that the whole clinical picture is much more important than the recognition of any one symptom, however serious or apparently significant, the discussions on heart affections, on nephritis and on stomach diseases at the recent session emphasized the necessity for the clinical investigation of all sides of the pathologic condition present, rather than of any single symptom or even set of symptoms. This is the position that has always been recognized by conservative clinicians as most helpful in every generation. It constitutes the reason why practitioners of wide experience have frequently reechoed the old saw: "It is more important to know what sort of a patient has the disease than what sort of a disease the patient has."

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[1] Jour. of Exper. Med., vol. iii, No. 4.
[2] La Semaine Médicale, July 16, 1902.

In the discussion on heart disease, the old custom of attributing most cases of cardiac disease to rheumatism and of considering this as a sufficient explanation was called in question in order to insist again on the necessity for studying the various types of so-called acute rheumatism that may be present, especially from the standpoint of the pathologist. The declaration was made that not a few of the affections of the heart valves ordinarily attributed to rheumatism resemble those produced by septic conditions, much more closely than has been imagined. Renewed attention was called to the fact that gonorrheal rheumatism occurs much more frequently than was formerly thought, and that heart complications of this affection are not at all rare. From the standpoint of the clinician, it was emphasized that the surest sign of an affection being simple articular rheumatism is the fact that it leaves no mark in the joints and that as the joint tissues, in certain ways, are the analogues of the heart valves, it would be rather surprising if simple rheumatism produced as many heart complications as has been supposed. When the mark is left on the joints, usually some secondary affection has existed and it is to this that the persistent pathologic sequelæ are to be attributed. To a considerable extent, this same thing would seem to be true of heart affection. The necessity for careful investigation of each individual case so as to determine that no secondary infection has taken place will be the true criterion of progress in our knowledge of rheumatic affections and their complications.

With regard to nephritis, it was shown that the presence of both albumin and casts is not sufficient of itself to make the diagnosis of Bright's disease. Indeed, it is when the kidneys are healthiest, as, for instance, in the athlete—the long distance runner, or the oarsman—that casts are most abundant, if somehow sufficient irritation of the organ be set up in order to produce this reaction. On the other hand, it is when degenerative processes are early and active that albumin is likely to be most abundant. The real diagnosis of Bright's disease can not be made until after the changes in heart and arteries which constitute the danger signals of the affection can be recognized. Albumin and casts, either or both, may be present, under exceptional circumstances, for many years without the prognosis of the case necessarily being unfavorable. It is the whole condition of the individual that must constitute the basis of any proper estimation of the significance of the various symptoms in his particular case.

With regard to gastric diagnosis, practically the same conclusions were suggested as with regard to urinary examinations. A single examination in either case, no matter what its apparent significance, should not be allowed to be the main element in the appreciation of the patient's condition. Variations in gastric chemistry are especially likely to be illusory unless all the clinical symptoms of the case are carefully investigated. In general, supposed pathognomonic symptoms of stomach disturbance were stripped of their conclusive significance and shown to be only aids to diagnosis, some of them not of very great value. Only a careful study of all the pathologic conditions present, even of those quite apart from the stomach itself, serves to show what is the real basis for the symptoms present and what indications for treatment are afforded.

No better lesson could well have been impressed on the general practitioners of this country than this precious one of considering all sides of the clinical problem before coming to diagnostic conclusions. Snap diagnoses may seem very brilliant, but, in most cases, they are almost sure to be wrong, and even under the most favorable circumstances they only too frequently call exaggerated attention to some special feature of the case, and thus preclude proper consideration of complicating circumstances that may be of even more importance for the matter of treatment than the basic conditions so readily recognized. If the Portland session shall have driven home even to some slight degree this invaluable precept of studying each individual patient for himself rather than seeking to find the supposed pathognomonic symptom of his affection, then its effects will be far reaching, even beyond expectation.

THE YELLOW FEVER EPIDEMIC.

During the past week the fever has not spread so rapidly. Up to August 8 the total cases numbered 565 and the deaths 113, a mortality of just 20 per cent. Some new foci have been found in Louisiana outside New Orleans, and there seems to have been some concealment of cases. As appeared probable last week, the business men, acting with the local and state authorities, united in asking the President to direct the United States Public Health and Marine Hospital Service to assume *full control* of the efforts to check the epidemic. The commercial interests of New Orleans readily agreed to contribute the fund needed by the service in order to accomplish the heavy task assigned to it. In New Orleans and Louisiana splendid harmony of medical efforts continues, and the physicians of the rest of the country may well be proud of their fellows in the stricken city. The local profession and health authorities promise full and active co-operation with the federal service, of which Surgeon White is locally in chief command.

Already it is possible for us to speak with the greatest pride of the conduct of the citizens of New Orleans. Never has a community more readily or more generally accepted the advice of scientific physicians. With startling and admirable confidence in the newest teachings of scientific medicine with regard to the causation and mode of propagation of yellow fever, New Orleans has furnished the money and the volunteers necessary to carry on rational methods of exterminating an epidemic. New Orleans certainly has earned the respect of the world. Unfortunately there is a background to afford a contrast, for it could be wished that the same praise had been deserved by the neighboring communities. The profession must blush at the medieval quarantines that in some quarters have been raised against the afflicted city. Medical science yet knocks in vain at some doors, and "man's inhumanity to man" stands black on the pages of our newspapers. Even has it been so bad that medical members of local boards of health have resigned in futile protest against the adoption of brutal and irrational methods. From Mississippi comes tales of physicians forced to deny their diagnosis of fever; and the city council of Gulfport, Miss., as an emergency measure, passed an ordinance subjecting to a fine any physician whose report of a yellow fever case is incorrect. From such an environment the civilization of New Orleans shines out brightly, and we fully believe that in the next few weeks she is destined to give the country a salutary lesson of the success of civilized and scientific methods for exterminating epidemic disease.

THE BRITISH MEDICAL ASSOCIATION TO MEET IN CANADA.

At its recent meeting at Leicester, the British Medical Association accepted an invitation extended by the profession of Toronto to meet in that city in 1906. This will make the second time that the British Medical Association has met on this side of the Atlantic, the previous meeting being held in Montreal in 1897. We congratulate our Canadian brethren on having again succeeded in getting the Association to meet with them, and hope that the coming meeting will prove to be even a greater success than the one held in 1897. Toronto is very close to that imaginary line that separates the United States from Canada—a political and not a scientific line—and we have no doubt the great majority of our English brethren will step across this line and shake hands with us. All who do will certainly be welcome.

SUICIDE STATISTICS.

In *The Spectator* for July 27, 1905, Frederick L. Hoffman, the statistician, writes on "The Suicide Record of 1904." He bases his analysis on official returns from 50 American cities reporting 2,927 suicides in 1904. The rate per 100,000 of population is 19.5, which is the highest since 1890, when this annual tabulation was begun and when the rate was 12.0 per 100,000. The increase has been constant, and Hoffman describes it as one of the most dangerous tendencies in modern American life. The detailed results are mystifying, especially as to geographic distribution. San Francisco holds the "bad eminence" of leader in this race, the rate per 100,000 having been 23.7 in 1890, 49.9 in 1900, and 72.6 in 1904. On the other hand, Chicago in 1904 had a fall in mortality from this cause—20.6, as compared with 23.4, the average of the previous decade. Boston and Brooklyn also show a decrease, while Oakland, Hoboken, St. Louis, Indianapolis, Cincinnati, Orange and Pittsburg show very considerable increases. In New York, Milwaukee, New Orleans, Rochester and Buffalo the rate was stationary or showed only slight increase. Neither size nor climate will consistently explain such discordant facts. In the smaller cities some of the larger jumps in 1904 are probably accidental, and will very likely be compensated for in succeeding years. Hoffman thinks the increasing Jewish element in the population of New York accounts for the absence of an increase in the largest center of population. Despite fluctuations and offsetting conditions, it can not be denied that the figures show a gain in the suicide mortality. Abroad, Paris shows a marked fall in the suicide rate for the decade (in 1894, 42.5; in 1903, 26.7). Berlin holds second place among the world's great cities with a rate that varies little from 27.5 per 100,000, while London maintains a low rate—10.8—with only a slight increasing tendency. Hoffman thinks "we may anticipate a still further increase in the suicide rate of American cities in the near future." Perhaps he is correct in this evil forecast, but the premises for such a conclusion do not appear certain. At least, it may be noted, the figures from Paris show that it is possible for the suicide rate in a large city to reach a maximum point from which for some years there is a steady decline. In the light of so many vigorous efforts as are now in progress to improve the conditions of urban life, let us hope that the near future will witness, at least in some of our American cities, a fall in the suicide rate comparable to that still proceeding in Paris.

IDIOPATHIC RECURRING THROMBOPHLEBITIS

Thrombophlebitis is most commonly due to infective agencies, but cases have been observed in which the condition is attributable to the gouty or arthritic diathesis. In the latter circumstances, the occlusion of the vessel has exhibited a recurring tendency, successive portions of the vein being, in turn, involved in an ascending manner. The lower extremities are generally affected and there is little local and no general reaction. In another group of cases, the lesion develops in the absence of a recognizable etiologic factor, and the tendency has been to consider these cases, also, of gouty or arthritic origin. From this view Dr. John B. Briggs[1] is inclined to dissent, and he reports three cases, together with four from the literature, in which recurring thrombophlebitis occurred without obvious cause. In his opinion, the condition is to be attributed to phlebosclerosis, with the development of parietal thrombosis. In the way of treatment he recommends high ligation of the vein, with the object of eliminating the danger of embolic complication and avoiding protracted rest-treatment.

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[1] Bull. Johns Hopkins Hospital, June, 1905, p. 207.

Medical News

ILLINOIS.

Measles in Evanston.—Evanston is suffering from an epidemic of measles, of which 200 cases have been reported. The Evanston branch of the Chicago Medical Society has appointed a committee consisting of Drs. Sarah H. Brayton, Henry B. Hemenway and Stephen V. Balderston, to assist the local health department.

Farmers Doped and Duped.—It is reported that about 20 farmers in Lake County have been swindled by an alleged physician, who agreed to cure them of supposedly incurable diseases, and accepted in payment for his services notes payable one year from date. Medicine which was sent could not be taken and in due course the notes were presented for payment.

Personal.—Dr. Theodore A. Johnson, Xenia, has been reappointed sanitary physician of the city.——Dr. John S. Kennelley, Easton, was thrown from his buggy July 27 and fractured his left leg.——Dr. Robert J. Midgley, Wilmington, has started for Europe.——Dr. Richard E. Shurtz, Champaign, assistant surgeon, Ill. N. G., assigned Fourth Infantry, has resigned.

Holds License Law Not Retroactive.—The Appellate Court on August 6 affirmed the decision of the Kankakee County Circuit Court in the case against Dr. P. R. Langdon of practicing medicine without a license, deciding in his favor. State's Attorney Miller declares that the state will take the case up to the Supreme Court. Dr. Langdon declares that he was practicing in this state before the act was passed, in 1899, and therefore was not amenable. The case hinged around the word "begin." The act reads that physicians can not "begin" practicing medicine without first obtaining a license. The Appellate Court holds that the law does not apply to doctors who practiced before the act became a law, and the decision was accordingly handed down in favor of the defendant.

Chicago.

Deaths of the Week.—For the week ended August 5 the mortality was equivalent to an annual rate of 14.85 per 1,000, which contrasts unfavorably with 13.57, the rate for the previous week, and 12.78, the rate for the corresponding week of 1904. Of the 567 deaths, 170 were of infants under one year; 47 of children between one year and five years of age, and 91 were of individuals over 60. Acute intestinal diseases caused 129 deaths; consumption, 71; violence, 42; nephritis and heart diseases, each 38; cancer, 33, and pneumonia, 30.

Personal.—Dr. Wilfred H. Manwaring of Johns Hopkins Medical School, at present fellow of the Rockefeller Institute for Medical Research and assistant in pathology in the University of Chicago, has been appointed head of the new department of pathology and bacteriology in Indiana University, with the rank of associate professor.—Dr. Joseph P. Smyth has been re-elected high medical examiner of the Catholic Order of Foresters.——Dr. C. Hubert Lovewell has been appointed to supervise the inspection of passengers from the infected districts in the South at Cairo.

July Heat Increases Mortality.—July, 1905, failed to make good the promise of the early part of the month to establish a new record of low July mortality. The excessively hot weather from July 16 to 19 inclusive was responsible for an increase of nearly one-half over the mortality rate of the first fifteen days, which was only 11.04, while the rate for the week ended July 22 rose to 16.42 per 1,000. Of the 2,280 deaths 595 were of infants under one year; 211 of children from one year to five years of age, and 343 of aged persons over 60. Acute intestinal diseases caused 424 deaths; consumption, 279; violence, 189; nephritis, 157; heart diseases, 196; cancer, 111, and pneumonia, 126. The mortality for the month was equivalent to an annual rate of 13.48 per 1,000.

KANSAS.

Must Fumigate Schoolhouses.—The State Board of Health has issued an order that every schoolhouse in the state must be fumigated before the opening of the school term in September.

Health Board Elects.—At its annual meeting, June 27, the State Board of Health elected Dr. Joseph B. Carver, Fort Scott, president, and Dr. B. J. Alexander, Hiawatha, vice-president. The secretary, Dr. S. Jay Crumbine, Dodge City, holds over.

Now Has Bulletin.—Volume 1, number 1, of the *Bulletin of the Kansas State Board of Health*, appeared July 1. It is a neat eight-page periodical, and the initial number discusses health; gives the vital statistics for June, and prints an article on "The Disgrace of Typhoid."

State Medical Department Preparations.—A building in Kansas City has been leased for the medical department of the State University and lectures will begin September 6.——Two dispensaries have already been established.——The university has secured the use of St. Joseph's, Bethany, the German and St. Margaret's hospitals for clinical teachings for its students.

New Hospitals.—Larned is to have a new fifteen-room hospital.——The corner-stone of the new Allen County Hospital at Gas City was laid July 4.——The Mennonites are building a new hospital at Newton.——The contract for the erection of the Eleanor Taylor Bell Memorial Hospital Medical Pavilion at Rosedale was let August 1. The building will cost $15,000.——St. Mary's Hospital, Emporia, will build a portion of the structure, which will cost $15,000.

Personal.—Dr. Willard F. Jarrett, Fort Scott, has been appointed a member of the faculty of the medical department of the State University, Rosedale.——The governor has reappointed Drs. Earnest P. Mills, Olathe; Alexander B. Scott, Jetmore, and Jonathan B. Carlile, Leon, members of the State Board of Health.——Dr. Clarence C. Goddard, Leavenworth, has been appointed to the chair of nervous and mental diseases in the State University.——Dr. Frank Eckdall has been appointed local surgeon for the Santa Fe System in Emporia.——Dr. Charles H. Lerrigo has been appointed a member of the State Board of Health, vice Dr. Charles Lowry, deceased.——Dr. Charles S. Newlon, superintendent of the School for Feeble-Minded Youth, Winfield, has been deposed by the State Board of Control, and has been succeeded by W. C. Van Nuys, at present assistant superintendent of the Topeka State Hospital.

MARYLAND.

Personal.—Dr. William S. Welch was elected health officer of Annapolis, July 31.

Smallpox.—Two cases of smallpox are reported in Calvert County, which it is believed originated from Washington.

Hospital for Hagerstown.—The success of the project to establish a hospital at Hagerstown has been assured by the donation of six building lots, valued at $15,000 and a check for $5,000 from a gentleman of Williamsport. A fine property on Potomac Avenue has been secured for the site.

Half a Century in Service.—Dr. Joshua W. Hering, Westminster, celebrates this year the semi-centennial of his professional career. During this period he not only was an active practitioner, but served his state as senator, and as comptroller of the state treasury. He is president of the board of trustees of the Western Medical College, and received the degree of LL.D. from St. John's College in 1900.

Baltimore.

Bequests.—The Home for Incurables has received a bequest of $1,500 and the Church Home and Infirmary one of $1,000 recently.

Personal.—Dr. John C. Hemmeter is at Bedford Springs, Pa.——Dr. Leonard Turlington is at Fair Oaks, Va.——Dr. Isham R. Page is at Northport, Maine.——Dr. Harry E. Peterman is at Grant, Pa.——Dr. Arminius C. Pole is at Chautauqua, N. Y.——Dr. F. Randolph Winslow is in Alaska.——Dr. Eugene Lee Crutchfield underwent successfully an operation for appendicitis at St. Joseph's Hospital, July 31.——Dr. Dudley Williams has returned from Europe.——Dr. E. Jones Williams has been appointed health warden of the First ward, vice Dr. Jesse W. Williams, his son, deceased.

Would Equalize Qualifications.—Dr. David Street, dean of the Baltimore Medical College, calls attention to the need of high schools throughout the state that the youths of the country may enjoy advantages of education equal to those in the city. He demands that the legislature take action on this important matter, which has a practical interest at this time to the medical colleges, in view of the requirement of the Association of American Medical Colleges that, commencing with next session, all matriculants shall have had a four-year high school course. He calculates that the Baltimore schools will lose half their students by the enforcement of this requirement.

NEW JERSEY.

Hospital Open.—The first ward in the Italian Hospital, a Roman Catholic institition in Orange, is now open. The hospital is to be called the Hospital of the Immaculate Conception, and the ward just opened is known as St. Anthony's ward.

Personal.—Dr. Orange H. Adams, Vineland, was taken seriously ill August 1 with congestion of the spine.—Dr. Frank Neal Robinson, a member of the Camden City Council, was the guest of honor at a dinner August 6.——Drs. William Q. Clark and Nelson B. Oliphant, Trenton, are in Vienna.

NEW YORK.

Personal.—Dr. Willis. E. Merriman, Jr., Albany, has been appointed resident physician at the Seton Hospital.——Dr. Frank E. White, senior house physician at Ellis Hospital, Schenectady, has resigned and will practice in the city.

Enforce Ordinance.—In accordance with the edict prohibiting holding of assemblages in Syracuse during the scarlet fever epidemic, the health inspector on July 31 dispersed a crowd of about 700 that had gathered to witness a tent vaudeville show.

To Prosecute Quacks.—The Schuyler County Medical Society recently adopted the following preamble and resolution:

> WHEREAS, Schuyler County, and especially the village of Watkins, have become territory infested by quacks and fakers, who are constantly violating the laws of the state by [illegible] and practicing illegally, and who, by their [illegible] are robbing the unsuspicious, and who, by th[illegible] ness, ignorance and deception are endeavoring to put legal and respectable practitioners in contempt: therefore be it
>
> *Resolved,* That the president of this society appoint two members to act with himself, thereby constituting a committee to be known as the legislative committee, and that they be and hereby are instructed and empowered to prosecute all persons in Schuyler County who violate the laws of the state relative to the practice of medicine and surgery; and it is further resolved that all expenses incurred by said committee shall be paid by the Schuyler County Medical Society.

New York City.

Bogus Doctor Sentenced.—Alfred Meyer has been sentenced to eleven months' imprisonment and a fine of $500, or to serve in prison one day for each dollar not paid for posing as a physician and swindling poor people.

Work for the Winter.—The New York Academy of Medicine has sent a communication to the members requesting that titles of papers to be read during the coming winter be sent to the secretary as soon as possible. It is requested that communications be condensed so that they can be presented in from eight to twelve minutes.

Contagious Diseases.—There were reported to the Sanitary Bureau for the week ended July 29, 342 cases of tuberculosis, with 141 deaths; 274 cases of measles, with 13 deaths; 166 cases of diphtheria, with 13 deaths; 141 cases of typhoid fever, with 18 deaths; 54 cases of scarlet fever, with 4 deaths; 21 cases of cerebrospinal meningitis, with 10 deaths, and 14 cases of varicella.

Death Rate Still High.—The death rate for the week ending July 29 was 20.68 per 1,000, which is more than seven points lower than that of the preceding week. There were 455 deaths, 204 less than the preceding week, and of these 27 were directly due to the heat. The deaths from cerebrospinal meningitis during the week numbered only 10, the lowest number for nearly a year.

The Staten Island Mosquito War.—Dr. Doty expresses himself as very much encouraged by the way in which the people of Staten Island have taken up the mosquito crusade. The appropriation of $17,000 asked for the purpose of draining swamp lands has been granted. Twenty thousand circulars have been sent out explaining the methods of getting rid of mosquitoes and of preventing their incubation.

Fear Typhoid Epidemic.—An increase in the number of typhoid fever cases at Coney Island is causing some apprehension. At least 15 new cases have been reported within the last three weeks. There are at present 8 cases of typhoid at the Coney Island Reception Hospital Dispensary and several cases have been transferred to the Kings County Hospital. The outbreak is attributed to polluted water, improper sewage or impure milk. Coney Island is supplied by the same water mains as supply Bath Beach, where typhoid has assumed unusual proportions since June 1.

City Hospital Plans.—Drawings of the plans for the improvements on North Brother Island have been received by the Board of Health which include an increased acreage of more than one-third. The plans include seven new pavilions, five additional isolation ward buildings, two chapels, a large home for nurses and a large storehouse. These improvements, including enlarging the island, will cost $1,500,000. When these plans are carried out the total capacity of the island will be more than 1,000 patients and the plant will be the most complete in the country. Permission has been obtained from the government to make the proposed fill-in.

The American Medical Special.—This excursion train, which left New York on June 24 and arrived there on August 3, after a tour of the West, is said to be the only excursion train in the history of railroading in this country which has made such a lengthy trip and reached home intact without accidents of any kind. The physicians from Greater New York on this train were Dr. and Mrs. Dexter Ashley, Dr. William Francis Campbell, Dr. John W. Parrish, Dr. and Mrs. L. Grant Baldwin, Dr. Thomas F. Reiley, Dr. E. Franklin Smith, Dr. J. Riddle Goffe, Dr. and Mrs. E. F. Hurd, Dr. and Mrs. John T. Nagle, Mrs. J. E. Houghton and Dr. Frederick Holme Wiggin.

Buffalo.

Fumigating School Books.—Work is now in progress of fumigating all the text books used in the public schools of Buffalo.

Personal.—Dr. Frank W. Hinkle has sailed for England.——Dr. Ludwig Schroeter is in the Thousand Islands.——Dr. Marshall Clinton has returned from a trip up the lakes.——Dr. Dewitt C. Greene has returned from a European trip.

Health Department Evicts.—The Health Department has caused many tenants in tenement houses to vacate for violation of the tenement house ordinances. About fifty families, or more than 200 persons, have been compelled to vacate.

German Hospital Staff.—The medical staff of the German Hospital has elected the following officers: President, Dr. Charles H. W. Auel; vice-president, Dr. Marcello Hartwig; secretary, Dr. Frederick Zingheim, and treasurer, Dr. John G. Meidenbauer. Drs. Wilhelm Gaertner and John V. Woodruff have been elected members of the staff.

The University.—The regular term of the medical department of the University of Buffalo will begin September 2. The following graduates of the class of 1904 have received hospital appointments: Buffalo General Hospital—Drs. Herman D. Andrews, Harry E. Brauer, Stephen M. Hill, Discum C. McKenney, Victor A. Pschellas and William J. Sullivan. Erie County Hospital—Drs. William H. Prudden, Arthur C. Schafer, Joseph A. Peaslee, Carl M. Fiero, Abraham Lande, George B. Jackson, Charles W. Bethune and Norton H. Good. Sisters of Charity Hospital—Drs. John M. Flannery, Eugene R. Luiklaten, George A. Bicker and Edwin Carlton Foster. German Hospital—Dr. Jacob Schwitzer.

Osteopathic Diploma Seller Arrested.—"Dr." John W. Banning, president of the Atlantic School of Osteopathy, has been arrested on the charge of issuing diplomas from the Atlantic School of Osteopathy, situated in Buffalo, without license from the State Board of Regents. This school has been in existence for a number of years and is said to have issued many diplomas. Coincident with the arrest of "Dr." Banning comes the announcement that Fred Williams is suing the school for $10,000 for alleged malpractice. Williams, it is alleged, went to the school last March for osteopathic treatment, being told his hip would be strengthened. Following the treatments an abscess developed which compelled Williams to be confined to bed and only now he can get about with crutches.

PENNSYLVANIA.

Personal.—Dr. Milton C. Dunnick, Stewartstown, has located at Newmarket, Md.

Typhoid Decimates Village.—It is reported that one-tenth of the population of Dundaff, Susquehanna County, is ill with typhoid fever, due to the use of water from contaminated wells.

Change of Staff.—On August 1 Dr. Thomas F. Nason assumed charge of the surgical ward of the McKeesport Hospital, and Drs. F. W. Rudolph, Allegheny; J. B. Fealy, New Philadelphia; W. C. Hiesey, Philadelphia, and George L. Howder, Elizabeth, took their places as house staff of the institution.

Want Record Cleansed.—The Medical Association of Monessen has begun civil proceedings in the courts to show cause why the registration of Samuel, otherwise known as Edward S. and Edward Barnes, should not be stricken from the records. He registered under the act of 1881 and recorded seventeen years of continuous practice from 1871 to 1888, as follows: Sandy Lake, four years; Jackson Township, five years; Sheakleyville, three years, and Stoneboro, five years, all in Mercer County. His registration was a few months previous to his conviction of arson and sentence to imprisonment in the Western penitentiary for nine years. It is the purpose of the association to show that this individual never practiced at these places, that he is a bad character and should be prosecuted to the limit. The physicians of Monessen invite all physicians who know of this man and who can give any evidence or the names of persons who could do so, to communicate with their attorney, A. M. Weyant, at Greensburg, or with the president of the association, Dr. Arthur R. Wilson, Monessen.

Philadelphia.

Personal.—Dr. and Mrs. Howard F. Hansell have gone to Lake Rosseau, Canada.——Dr. Alfred C. Whelen is spending part of August in Canada.——Dr. and Mrs. Thomas J. Orbison sailed for Europe on July 21.——Dr. O. Clayman Campbell sailed for Europe on the *Westernland,* August 5.

Hospital Report.—The report of the German Hospital shows that during the month ending July 20, 261 patients were admitted. Of this number 259 were discharged cured, 20 died and 162 remain at the hospital. During the same time 4,677 were treated in the dispensary, of which 1,298 were new patients, and 864 accidents.

To Protect Infants in Hot Weather.—A pamphlet entitled "Care of the Baby in Hot Weather" has been issued by the Bureau of Health, to be distributed by the assistant medical inspectors. It contains much valuable information for the guidance of mothers in the care of their children during the heated season.

Health Report.—During the week ended August 5 there was reported to the health bureau a total of 43 deaths, being an increase of 6 over those of last week and an increase of 55 as compared with the corresponding week of last year. The principal causes of death were: Typhoid fever, 8; whooping cough, 8; diphtheria, 4; tuberculosis, 52; cancer, 20; apoplexy, 15; heart disease, 34; diseases of arteries, 7; acute respiratory disease, 23; enteritis (under 2 years), 95; enteritis (2 years and over), 10; cirrhosis of liver, 7; appendicitis, 6; Bright's disease, 29; premature births, 14; congenital debility, 19; old age, 9; accidental injuries, 16; marasmus, 19. There were 166 cases of contagious disease reported, with 12 deaths, as compared with 123 cases and 25 deaths for the previous week. One hundred new cases of typhoid fever were reported for the week, as compared with 91 the previous week.

Impure Milk.—A bill was introduced in Common Council August 3, prohibiting the sale of adulterated or impure milk. The measure was referred to the committee on law. For all violations there is provided for the first offense a fine of $50, and for the second offense and subsequent offenses a fine of $100. For the enforcement of the terms of the ordinance an inspector of milk is to be appointed by the director of public safety, with the provision that a report is to be made to the Board of Health, the latter to furnish the newspapers with a full list of milk producers from whom samples have been taken during the previous month, with the results of the analysis and with notes indicating to what extent, if any, such samples were adulterated or otherwise altered or deficient. Four dealers accused of using adulterants in milk or selling skimmed for whole milk, were held under $300 bail each for court, August 4. Dr. Robinson of the Board of Health testified for the state.

Hospital Reports.—During the month of July there were 89 patients admitted to the Polyclinic Hospital; 101 were discharged, and 1,845 cases were treated in the dispensary.——The Presbyterian Hospital admitted 261 patients and discharged 267, 208 remaining August 1; 2,200 were treated in the dispensary.——The Women's Hospital admitted 108 patients and discharged 123, the number remaining August 1 being 76. In the clinics there were treated 521 new and 1,631 old patients, a total of 2,152.——Eighty-seven patients were admitted to the Methodist Hospital, 763 were treated in the dispensary and 2,843 visits were made to the dispensary.——In the Howard Hospital 279 accident cases were treated, 2,930 prescriptions were put up, 849 new dispensary patients treated and 31 admitted to the hospital.——The Medico-Chirurgical Hospital treated 211 house patients, 982 in the accident rooms and 5.117 in the dispensaries.——The German Hospital admitted 125 patients, discharged 110; number remaining, 72; 1.603 cases were treated in the dispensary.——In the Mount Sinai Hospital 3.903 patients were treated in the dispensary, 382 accident cases; admitted to wards, 72; discharged cured, 41; remaining at end of month, 31.——Number of cases admitted to St. Agnes' Hospital, 223; remaining in wards from last month, 99; discharged during month, 129; total number of patients in the hospital, 94; number of ambulance calls, 39; brought by patrol, 59; in the out-patient department there were 596 new cases, 2.122 old cases; radiographs, 15; massage and electricity, 154 cases.

TEXAS.

New College Building Almost Ready.—The new building for the medical department of Southwestern University, Dallas, will be ready for occupancy early in October.

New Officers for Hospital.—The directors of the Physicians' and Surgeons' Hospital, San Antonio, have elected Dr. Frank Paschal, first vice-president, and Dr. John S. Lankford, treasurer.

Many Treated for Rabies.—Dr. Benjamin M. Worsham, Austin, who is in charge of the Pasteur Institute, established a few months ago as an adjunct to the State Lunatic Asylum, reports that he has treated 65 patients, and that the institute has been more than self-supporting. Of the patients treated, 3 were bitten by skunks, one was bitten by a wolf, and the remainder were bitten by dogs rabid or suppposed so to be.

Personal.—Dr. Marvin L. Graves, San Antonio, superintendent of the Southwestern Insane Asylum, has resigned to accept the chair of medicine in the University of Texas, medical department, to succeed Dr. James M. McLaughlin. He has been succeeded by Dr. Thomas O. Maxwell, assistant superintendent of the State Lunatic Asylum, Austin.——Dr. John T. Moore, Galveston, associate professor of medicine in the State University Medical Department, has resigned.——Dr. George H. Prothro, Beaumont, sustained a cerebral hemorrhage July 20 and is in serious condition.

Hospital Notes.—A new hospital is to be erected at Temple by the Santa Fe Hospital Association.——The addition to the hospital at the Confederate Home, Richardson, for which an appropriation of $2,500 was made by the legislature, will soon be ready.——Dr. Leo E. Knopf is about to build a general hospital at Sterling City.——A donation of $5,000 has been received from McKinney for the Baptist Sanitarium, Dallas.——Temple Sanitarium has been incorporated at Temple with a capital stock of $20,000, by Drs. Arthur C. Scott and R. R. White, and F. K. Stroop.

GENERAL.

Yellow Fever Situation in Panama.—It seems to be the opinion of those in authority that the yellow fever situation on the isthmus is considerably ameliorated, and that Panama now needs only drastic sanitary measures.

Administration Buildings to Be at Ancon.—A cable from Panama states that as Ancon is the healthiest spot between Panama and Colon the Isthmian government has decided to construct there the administration buildings and residences for the governor and the employes.

Association of Obstetricians to Meet.—The American Association of Obstetricians and Gynecologists will hold its eighteenth annual meeting at the Hotel Astor, Longacre Square, New York, September 19-21. Dr. Robert T. Morris, 616 Madison avenue, New York, is chairman of the local committee of arrangements and will furnish further information on application.

American Public Health Association.—The thirty-third annual meeting will be held in Boston, Sept. 25-29, 1905. The secretary is Dr. C. O. Probst, Columbus, Ohio. Dr. H. P. Walcott, Cambridge, Mass., is the chairman of the local committee on arrangements. The subjects discussed will include: "Methods of Securing More Uniform Instruction and Co-operation in Health Work," "Water Supply," "Tropical Hygiene," "Porto Rico Anemia," "Yellow Fever," "Diseases Common to Man and Animals," "Military Hygiene," "Quarantine Methods," "Recent Researches in Smallpox," "Modes of Dissemination and Rational Quarantine in Epidemic Cerebrospinal Meningitis," "Disinfection," "Sewage and Waste Disposal," and "Car Sanitation."

American Academy of Ophthalmology and Oto-Laryngology.—The tenth annual meeting of this body will be held in Buffalo, Sept. 14-16, 1905. The secretary is Dr. George F. Suker, 103 State Street, Chicago. The chairman of the committee of arrangements is Dr. Alvin A. Hubbell, 212 Franklin Street, Buffalo, N. Y. Some of the forty-seven papers that are announced are on: "Formalin in Ear, Nose and Throat Practice," "Quinin Amaurosis," "Open Treatment or Dressing After Operation," "Glasses in Railway Service," "Retinal Changes as an Aid to Diagnosis in Vascular Degeneration." "Tubercular Iritis," "Bacteriology of Dendritic Keratitis," "Fallacies." "Radium in Diseases of the Throat." "Hay Fever Heresies," "Mastoid Operations," "Hemorrhage," "Failures in Ophthalmic Practice," "Teaching of Ophthalmology," "Diabetic Myopia," and "Cures of Migraine and Idiopathic Epilepsy by Glasses," etc., by Drs. Stein, Culbertson. Barck. Black, Woodruff. Keiper, Willetts. Freudenthal. Ewing. Stucky, Mayer, *Gould,* Alleman, Weeks and Wood, respectively.

THE YELLOW FEVER SITUATION.

REPORT FROM PRESIDENT OF STATE BOARD OF HEALTH—THE UNITED STATES ASSUMES CHARGE—PUBLIC HEALTH AND MARINE-HOSPITAL CIRCULAR.

Report from President of Louisiana State Board of Health.

In accordance with the request of The Journal, Dr. Edward Souchon, president of the Louisiana State Board of Health, very kindly sends the following report:

"The first intimation received by the health authorities in New Orleans of any case resembling yellow fever was on July 13, when two physicians reported to the president of the State Board of Health and to the city health officer jointly, two cases, one dead that day and the other dying, in which hemorrhagic vomiting, jaundice and uremic convulsions were present. Both cases were from the same locality, near the intersection of Decatur and Ursuline streets, in the second district of the city. In both cases autopsies were peremptorily refused. In the same section of the city, peopled almost exclusively by Italians, four more cases with similar symptoms were discovered within the next four days.

"In the absence of an autopsy it was not possible for the health authorities to make a positive announcement of yellow fever, but on July 18 the president of the State Board of Health informed the state health authorities of Texas, Mississippi and Alabama, and the surgeon-general of the United States Marine-Hospital Service, that cases presenting symptoms of yellow fever had come to his knowledge in New Orleans, and that an autopsy would be held at the first opportunity, also that all proper precautions were being taken. The Public Health Service detailed Surgeon J. H. White, on duty in Mobile, to come to New Orleans, where he arrived in company with Dr. C. A. Mohr, acting state health officer of Alabama, on the morning of July 21. The other states did not send any representatives. The visiting physicians were taken to see the fever patients under treatment, and they pronounced the cases to be clinically yellow fever. On the strength of this decision, which the president of the Louisiana State Board of Health immediately wired to the state health authorities of Texas and Mississippi, those states, following the example of Alabama, declared quarantine against New Orleans on the same evening, July 21. On July 22 an autopsy was secured on a case which died in the Charity Hospital, and in which the findings were positive, though not strongly typical. The interest of the medical profession of New Orleans and of the citizens being intensely aroused, an energetic house-to-house canvass of the affected district was begun. This work was greatly assisted by the co-operation of the Italian consul and certain public-spirited Italian priests and citizens of that nationality.

"Owing to the secretiveness and race prejudice of the people among whom the sickness prevailed, it was extremely difficult to get at the real facts. In some instances doors were found locked and barricaded and had to be broken down, discovering cases which had been concealed. This sanitary crusade caused an exodus of Italians, some of whom made their escape into the neighboring country, where they have developed cases of fever at eight or ten localities. In every instance these cases have been promptly discovered and proper steps taken to prevent the spread of the infection. In New Orleans the disease has been almost exclusively confined to the Italian populace, exceptions being a few people of other nationalities accidentally exposed in the infected district.

"Up to August 3 the record of cases, deaths and new foci has been as follows: Cases of fever, 432; deaths, 84; new sub-foci, 69.

"It is the belief of the Louisiana State Board that the infection was introduced by passengers arriving from Belize, British Honduras, prior to the announcement of fever there, May 24, by the representatives of the United States Public Health Service, up to which time, under clean bills of health issued by the American consuls, more than 200 passengers from Belize and Porto Cortes came through to New Orleans after April 1. Edmond Souchon, M.D.,

"President Louisiana State Board of Health."

Louisiana.

United States Assumes Charge.—On request of the governor of Louisiana that the United States Public Health and Marine-Hospital Service assume charge of the yellow fever situation, the President immediately offered any assistance in the power of the government. He also telegraphed Surgeon-General Wyman asking for a report on what the government might do in addition to what the local authorities were already doing. Surgeon Joseph H. White, who was placed in charge of affairs at New Orleans August 7, outlines his plans for combating the disease as follows:

> Our work will be an enlarged application of the system at present in force—taking the utmost precautions to prevent persons from moving while in a possible incubative stage and infecting new districts; a rigid application of measures destructive to mosquitoes to the whole of any infected vicinity; daily inspection of every person in every house where there has been a case of fever and a duplication in such houses of destructive measures for mosquitoes.

The first eight of the forty surgeons of the Marine-Hospital Service who were assigned to duty in New Orleans are as follows: Passed Assistant Surgeons Rupert Blue, Joseph Greene, John McMullen and Donald H. Currie, Assistant Surgeons William C. Rucker, Steger, Smith and Sweet.

Demand That Militia Be Called.—The State Board of Health on August 8 decided to demand that the governor call out the militia to protect travel through the parishes which have imposed drastic quarantine against New Orleans.

New Orleans.—At a special meeting of the finance committee, August 6, $250,000 was offered to the federal government to be used for labor and supplies by the United States Public Health and Marine-Hospital Service in fighting the epidemic of yellow fever.

Archbishop Chapelle, who has been indefatigable in his work among the yellow fever sufferers, was seized with the disease August 5, but is reported as doing well at last accounts and past the crisis.

The record up to the evening of August 7 was as follows: Total cases to date, 565; total deaths to date, 113; total foci of infection, 97. On August 7 there were 32 new cases, with 8 deaths from 4 new foci of infection. On August 8 there were 60 new cases, with 4 deaths from 17 new sub-foci.

Outside Parishes.—Nineteen cases of fever were found at Patterson, St. Mary's Parish, August 7. Several cases were also found at Sellers, in St. Charles' Parish, 3 cases at Shreveport, with 2 deaths, 2 cases in Bon Ami and 1 in Jefferson Parish.

Telephone Service Suspended.—At Arcadia and Baton Rouge telephone service is reported to be suspended on account of the panic among employes in the country.

Detention Camps.—The camps at Fontainbleau, Slidell and Wyman have been improved and enlarged to accommodate the increased number to be held in quarantine.

Other States.

Alabama.—No other cases have been reported and the one patient at Montgomery is convalescing. The state health officer says that the state law guarantees to fever refugees the right to open windows and to have food and water, and that localities which forbid this are violating the laws.

Illinois.—The secretary of the Board of Health on August 5 issued the following order to local health officials south of a line drawn from Vincennes, Indiana, to East St. Louis:

> The Illinois state board of health urgently requests your co-operation in the enforcement of its order pertaining to refugees from the south. No person from any district in which yellow fever has occurred or may occur in the future should be permitted to be permitted to enter Illinois south of the line above described western railway until ten days after he has left the said district. No person from a state in which yellow fever has occurred should be permitted to enter Illinois south of the line above described unless he presents a certificate of health from national, state or municipal health officers. The conditions in the south call for constant vigilance on the part of local health officials of southern Illinois.

The State Board of Health has ordered a restriction in the issuance of health certificates, which in the future will be issued only to citizens of Illinois or to persons vouched for by citizens of Illinois.

Illinois now has seven inspectors in Cairo, beside the secretary of the State Board of Health and his assistant. Dr. Egan reports that many are applying for health certificates.

Kentucky.—Kentucky will be an open state as far as refugees from the fever districts are concerned. The refugees will be subject to examination, however, and will be detained temporarily in camps near the principal cities and towns.

Mississippi.—In addition to the revenue cutter *Winona*, which is now at Gulfport; the revenue cutters *Forward*, now at Key West; *Hamilton*, now at Tampa, and *Seminole*, now at Wilmington, N. C., have been ordered to Gulfport to aid in the maintenance of the national quarantine.

Missouri.—The quarantine orders issued by the Missouri State Board of Health against districts infected by yellow fever will be enforced along the eastern border of the state as far north as St. Louis, along the entire southern border, and along the western border as far north as Kansas City. The medical inspectors will examine all who enter the state from the South.

The St. Louis Board of Health, beginning August 8, will inspect passengers on trains and steamboats arriving from districts infected by the fever. Provision has been made to care for from 300 to 400 patients at the quarantine station.

New York.—Two members of the crew of the *El Paso*, from New Orleans, were removed to Hoffman's Island, August 5, on account of high temperature.——One member of the crew of the *Ligonier*, from Port Arthur, was removed to Hoffman's Island at the same time for observation.——The man from the *Seguranca*, who was detained at quarantine on suspicion of having yellow fever, is improving, and it is thought that his trouble is nothing more than malarial fever.——One passenger and five of the crew of the *San Jacinto*, from Galveston and Key West, have been transferred to Hoffman's Island for observation.——William B. Smith, a pantryman taken from the steamer *Advance*, from Colon, on August 3 with nine other suspects, died from yellow fever August 6. This is the third case of yellow fever on ships entering New York this year and the second death. There are at present nineteen other persons who are detained because of high temperature.

Pennsylvania.—The British steamship *Barnton*, from Port de Paix, Haiti, for Chester, has arrived at the Delaware breakwater with fifteen of her crew ill with "malarial fever." The ship called at Colon before leaving Port de Paix, and after leaving this port she put into Inagua for medical attendance on account of sickness of two of the crew, who were put off at that place. None of the crew has been removed from the ship and the Marine-Hospital authorities have not disclosed the nature of the disease.

Director Martin, of the Department of Public Health and Charities, Philadelphia, has made arrangements for the establishment of a field hospital in the Thirty-third ward for the treatment of any case of yellow fever that may reach the city. Search has been made along the piers of the river front and among the fruit to see if any *Stegomyia fasciata* could be found. All vessels and those on board are daily investigated by the state and federal officers at the quarantine stations at Marcus Hook and Reedy Island.

The State Quarantine Board met August 4 to take action to prevent yellow fever entering the port of Philadelphia from New Orleans. The meeting was called by Dr. Dixon, state commissioner of health, and one of the objects of the meeting was to prevent cargo from any ship from New Orleans or vicinity from being landed there.

South Carolina.—The mayor of Charleston has proclaimed a quarantine against fever refugees, to take effect August 6.

Tennessee.—The urgent quarantine decided on by the Memphis City Council was put in operation at noon, August 7. Guards were placed in the city and inspectors on every train so that no one can enter the city without a permit from the local board of health.

General.

HOW TO PREVENT YELLOW FEVER.

The Board of Public Health and Marine-Hospital Service on July 31 issued a circular emphasizing the practical bearings of the mosquito theory of the causation of yellow fever. Part of it is as follows:

NO MOSQUITOES, NO YELLOW FEVER.

"The infection of yellow fever is carried by mosquitoes, and by no other means is the infection spread.

"Persons take the disease by being bitten by mosquitoes that have previously bitten a yellow-fever patient.

"The mosquitoes to become infected must bite a yellow-fever patient during the first three days of his attack. These first three days, therefore, are the most important time for preventing the access of mosquitoes to a fever patient.

"It is often difficult to decide during the first three days whether a patient has yellow fever; hence the necessity in threatened communities of placing a mosquito bar immediately around every patient who has fever of any kind, and for three days at least.

FACTS ABOUT SCREENING.

"1. The netting used should have meshes fine enough to prevent the passage of mosquitoes (at least 18 to 20 meshes to the inch).

"2. It is important to screen the windows and doors of the house. It is doubly important to screen the beds of fever patients.

"3. Mosquitoes can bite through mosquito nets when any part of the patient's body is in contact with the netting.

"4. Frequent examinations should be made to see that there are no torn places in the netting or that no mosquitoes have found a lodging inside.

"5. The netting should be well tucked in to keep mosquitoes from entering.

"6. If mosquitoes are found within the netting they should be killed inside and not merely driven or shaken out.

"7. All cases of fever should be promptly reported to the local health officer. Awaiting his arrival they should be covered with a mosquito bar.

FACTS BEARING ON MOSQUITO DESTRUCTION.

"1. Mosquitoes live in the vicinity in which they breed. They do not often fly a long distance.

"2. Mosquitoes breed only in water—usually in artificial collections of fresh water.

"3. The young mosquito, or wriggler, lives in water at least seven to twelve days.

"4. Although the wrigglers live in water, they must come frequently to the surface to breathe.

"5. Coal oil on the surface of the water prevents the wrigglers from breeding.

"6. Destroy the breeding places and you will destroy the mosquitoes.

"7. Empty the water from all tubs, buckets, cans, flowerpots, vases once every forty-eight hours.

"8. Fill or drain all pools, ditches, unfilled postholes, and the like.

"9. Change regularly every day all water needed in chicken coops, kennels, etc.

"10. Treat with oil all standing water which can not be screened or drained (1 ounce of oil will cover 15 square feet of surface). The oil does not affect the water for use if the water is drawn from below.

"11. Where oil is applied to standing water it must be distributed evenly over the surface.

"12. Put fine wire netting over cisterns, wells and tanks of water in everyday use.

"13. Places in which it is undesirable to put oil, such as watering troughs for stock, lily ponds, and so forth, can be kept free from wrigglers by putting in gold fish or minnows.

"14. Clean away all weeds, grass, and bushes about ditches, ponds, and other possible breeding places, since these afford a hiding-place for the mosquitoes.

"15. Clean up vacant lots and back yards of all cans, tins, bottles and rubbish.

"16. First do away with, or treat, all places where mosquitoes are known to breed, and then begin to work on places where they might breed.

"17. Inspect and treat with coal oil gutters, culverts, ditches, manholes, catch basins, etc., along the roadside. Manhole covers should be screened.

"18. Houses should be cleared of mosquitoes by burning 1 pound of insect powder or 2 pounds of sulphur to 1,000 cubic feet of space. The mosquitoes will fall to the floor and should be collected and burned.

"19. Success in mosquito destruction depends on the co-operation of the members of the entire community.

"20. While the infection of yellow fever is carried by a single species of mosquito (the *Stegomyia*), to insure its destruction it is necessary to destroy all mosquitoes.

"In places liable to yellow fever both individuals and communities have an effective method of protecting themselves, as indicated above. Use the mosquito bar at once over all cases of fever until the danger from yellow fever has passed. Destroy all mosquitoes."

Paralysis of Fruit Trade.—Central-American steamers are beginning to go back to New Orleans as the Mississippi ports have instituted a strict quarantine against them, and as edicts have been issued against them forbidding fruit trains to go through Mississippi towns.——The United States Fruit Company has already ordered four of its ships back to New Orleans on account of the increase in rigidity of the regulations at Mobile.

Train Service Suspended.—On account of the yellow fever all passenger trains have been discontinued between New Orleans and Houston, putting an end for the time to all through service on the Southern Pacific system.

Mimic War Ends.—The difficulty between the naval forces of Louisiana and Mississippi culminated on August 5, when the Louisiana naval reserves drove from the Louisiana waters the entire forces of the Mississippi quarantine patrol fleet.

Foreign Experts Are Coming.—Surgeon-Major Ronald Ross, I. M. S. (retired), professor of tropical medicine, and Dr. Rupert W. Boyce, professor of pathology and dean of the School of Tropical Medicine, Liverpool, sail August 12 on the *Campania* for New York, en route to New Orleans.

Suspend Cuban Mails.—The postoffice department wired a general order August 8, suspending the dispatch of mails via New Orleans, for the Canal Zone, Cuba and the Republic of Panama.

CANADA.

British Medical Association Coming to Canada.—The British Medical Association has accepted the invitation of the Canadian Medical Association and the local branch of the B. M. A. in Toronto to meet in Toronto in 1906.

Winnipeg General Hospital.—During the week ending July 22, the total number of patients treated in this hospital, was 311, of whom 186 were men, 98 women and 27 children. In the out-door departments 109 were treated.

Honors for Canadian Medical Men.—Mr. I. H. Cameron, professor of surgery in the University of Toronto, and Dr. Francis J. Shepherd, professor of anatomy in McGill University, attended the centenary of the Royal College of Surgeons of Edinburgh and were honored with the degree of LL.D.

Generous Gift to Toronto Hospital for Sick Children.—Mr. John Ross Robertson, proprietor and publisher of the *Evening Telegram*, Toronto, and founder of the hospital for sick children, has recently made a presentation to the hospital of $75,000 for a nurses' home, which will be erected immediately, on the property to the south of the hospital.

Personal.—Dr. F. F. Wesbrook, professor of bacteriology in the University of Minnesota, has been visiting in Winnipeg. ——Dr. Donald McMaster, Sydney, Australia, sailed for England from Montreal on July 28. He has been inspecting children's hospitals through the United States and Canada, in the interests of the Royal Alexandra Hospital of Sydney, which is to be built in the near future.

British Columbia Medical Association.—The annual meeting of the British Columbia Medical Association was held at Vancouver, B. C., July 18-20. Dr. W. D. Brydone-Jack of that city being the president. Among the many members of the American Medical Association who attended the British Columbia meeting after they had been at the Portland session was the President-elect, Dr. W. J. Mayo of Rochester, Minn., who delivered an address on surgery.

Toronto General Hospital.—The city council of Toronto have approved of a by-law to raise $200,000 for the Toronto General Hospital. There was some opposition to the vote owing to the fact that members of the staffs of other hospitals in Toronto opposed it, taking the ground that such a large sum should be voted on by the rate payers and that the other hospitals should share in the donation.——Dr. J. N. Elliott Brown, Toronto, formerly secretary of the Ontario Medical Association, and for the past six years medical health officer, secretary to the governor and gold secretary at Dawson, has been appointed medical superintendent of the Toronto General Hospital to succeed Dr. Charles O'Reilly. July 27 the trustees, members of the staff and nurses of the institution, were presented to Dr. Brown at an informal reception held for his benefit.

FOREIGN.

Plague in India.—The mortality from plague in India is declining throughout the empire.

Plague in Peru.—Ten cases of plague are reported from Paita, in Northern Peru, with three deaths.

Plague and Variola in Brazil.—According to *Public Health Reports*, bubonic plague and variola have formed a fatal alliance in Rio Grande do Sul.

Plague in Chili.—A cable report from Santiago states that on July 9 a case of plague appeared in Junin, and that a suspicious case occurred July 17 in Antofogasta. July 20 the isolation hospital for plague patients was destroyed by fire.

Plague in Japan.—No additional cases of plague have occurred in Japan (excluding Formosa). The prompt suppression of plague in Kagawa Ken, after the disease had gained such a strong foothold, reflects great credit on the sanitary authorities.

Famine and Cholera in India.—A cable from Madras on July 31, stated that cholera had broken out among the refugees from the famine-stricken districts who have been crowding into the city for weeks. The death rate from cholera is stated to be 89.7 per thousand.

New Morgue for Sydney.—It is reported that in view of the representations made by the Health Board of Sydney, Australia, the government has appropriated $15,000 for the erection of a new morgue. It is intended that the building shall be similar in design to the Paris morgue.

New British Red Cross Society.—Under the auspices of Queen Alexandra a new Red Cross Society has been formed to co-ordinate all those existing societies for the care of the sick and wounded in war. It is hoped that Sir Frederick Treves will consent to preside over the executive council.

International Congress of Criminal Anthropology.—The sixth International Congress of Criminal Anthropology will be held at Turin, April 26, 1906. In connection with the congress there will be an exhibition of instruments and apparatus for the diagnosis of physical malformations favoring or influencing the tendency to crime, as well as the various methods of detecting criminal acts.

Memorial Homage to a Peruvian Confrère.—The *Cronica Medica* of Lima gives a list of ten prizes, ranging from $6 to $20, to be awarded for articles bearing on the scientific work of Dr. Raimondi and his personality. The first four prizes are for works on due "appreciation of his studies in the inorganic world," and the next four for the same for the "organic world," and the other two for "the personality of Raimondi and the transcendency of his work." The jury is a large one and comprises engineers as well as physicians. The books and scientific collections of the "Raimondi museum" are placed at the disposal of the competing authors.

Yellow Fever in Guatemala.—According to a report by Acting Assistant Surgeon Peters of the United States Public Health and Marine-Hospital Service, malaria and yellow fever are the prevailing diseases in Livingston. From July 6 to July 15, 4 cases of yellow fever occurred, one of which terminated fatally. Dr. Peters states that other cases of yellow fever undoubtedly have occurred, but have not been reported. He states that the authorities, while denying that the disease is yellow fever, acknowledge that it is a bad fever and that it kills. At first they fumigated the houses in which these cases occurred, but lately have not been doing so.

A School for Mothers in Madrid.—The *British Medical Journal* states that a school for mothers has been founded in Madrid by the Marquis and Marchioness de Casa-Torre. The medical director is Dr. Ulecia, who has charge of a dispensary for sick and weakly children. He gives regular instruction to mothers, making each case as it presents itself the text of a discourse in simple language on the best manner of feeding and generally caring for the child. All the mothers are present so that all may have the benefit of the demonstration. If sterilized milk is considered necessary, it is supplied; food and clothes are also distributed to deserving cases.

The Munich Medizinische Wochenschrift in Court.—The secretary of a Bavarian medical chamber, Dr. H. Sternfeld, considered that he had a grievance against the *Münchener med. Wochft.* for certain circumstances connected with the publication of the transactions of his medical chamber (Oberbayerische Aerztekammer). He consequently sued the responsible editor for damages, but the suit was dismissed with costs both in the first court and in the court of appeals. The editorial comment on the affair is as follows: "The case is typical of the present state of sentiment among colleagues here in Munich. It shows how, in certain circles, a person will act directly contrary to all considerations of professional amity when it is a question of injuring a colleague who has fallen into private disfavor. Private letters not intended for publication were published abroad and a suit for slander built up on absolutely trivial grounds to injure a colleague who had acted solely in the exercise of his professional duties as editor of the local weekly medical journal."

Sanitary Conditions in the Argentine Republic.—It is stated in *Public Health Reports* that the sanitary conditions in this republic are very bad. During the last month terrible floods have been prevalent in portions of the republic, and many lives have been lost either directly as a result or indirectly as a result of illness among persons temporarily living without any shelter. In addition, the weather there has been very cold and rainy, and with heavy fogs. Many of the people living in the districts lately flooded by the heavy rains are now sufferers from pulmonary affections. This is especially true of the northern portions of the republic. In Santa Fe this state of affairs prevails to such a degree as to suggest the conditions of an epidemic of some serious disease. In Gualeguay the rise on the rivers and streams is of such an extent that the surrounding country is inundated to a distance of 25 kilometers. A dispatch dated July 29 states that by a decree of the executive government most important sanitary works for the betterment of the population have been ordered in the province of Santa Fe.

International Medical Association for the Suppression of War.—One of the first acts of this new society was to pass resolutions congratulating President Roosevelt on his initiative and his efforts to bring "two nations together which have been separated by an abyss growing deeper every day." Other resolutions adopted urged a formal declaration of war as the indispensable preliminary to hostilities. Also that it would be wise and humane to insist on an international control of the manufacture of arms and modern explosives. Also that international problems should henceforth be submitted for solution to two tribunals, an international and a humanitarian tribunal. The first, composed of delegates from the corporations, would pass judgment on the question at stake. The second tribunal would be formed of representatives elected by each nation, and this would decide the questions affecting international and humanitarian laws. As mentioned before in these columns, membership in this international association is restricted to physicians. The central office is 25 rue des Mathurins, Paris. Dr. J. A. Rivere is the president.

Public Manifesto of the Medical Profession in Belgium.—The national federation, which includes most of the medical societies of Belgium, has been moved to action by various grievances against the state, the last straw being the refusal of the government to allow the incorporation of the medical assurance company, as mentioned in The Journal, June 24, page 1996. The federation has now issued a manifesto addressed "to the government, to our fellow-citizens, in the name of the physicians of Belgium." It is published in full in the *Gaz. Méd. Belge*, June 22, with a preamble setting forth that the medical corps has never stinted its devotion to the institutions created in the interests of society. "It is always physicians who devote themselves and their energies and who take the lead in all the crusades against social plagues. The crusade against alcoholism, against tuberculosis and against infant mortality were started by physicians. Defenders of public hygiene, propagandists of all the reforms tending to the amelioration of the race, they have always felt in honor bound to place the interests of the whole above their private interests. But physicians are men, and as such they claim the right to live by their profession and not to be placed—on account of their profession—outside of the common laws framed for the benefit of all." The manifesto then takes up one by one various injustices inflicted on physicians by regulations which exclude them specifically from the rights of other citizens or impose special unremunerated duties on them. One of the eight clauses protests against a regulation, dating from 1903, which permits proprietors and insurance companies to send to the free public hospitals the workingmen injured in their service or insured in the societies. The public hospitals, the manifesto states, are made for the poor, not to relieve insurance companies of caring for their injured policyholders. The physicians of the public hospitals, who generally devote their services almost gratuitously, ought not to be burdened with the unremunerated care of these non-indigent persons. Clause 7 states that the number of unremunerated demands made on the physicians by the state is constantly increasing: declaration of diseases, compiling of statistics, free consultations, etc. The national and local administrations are so accustomed to relying on the devoted services of the medical corps that they never think of paying for any of the labor thus imposed. The medical profession believes that it is the duty of the government to take cognizance, in some way besides by mere platonic compliments, of the work constantly being done by physicians for the general welfare. Three-fourths of the entire burden of caring for the sick poor rests on the shoulders of physicians. The manifesto also refers to the refusal to incorporate *La Médicale*. "This society," it says, "grouped a large number of Belgian physicians, and by its powers and functioning it protected these confrères against the pretensions of ordinary insurance societies, insured them suitable remuneration and insured its policyholders prompt aid, prompt reparation and the free choice of physician. The refusal of the government to permit the incorporation of the society is an injury inflicted on the dignity and prestige of the medical profession and on its legitimate material interests." In conclusion the manifesto reiterates the fact that the physician's career is one of self-sacrifice and devotion. His hours are largely given to the poor and to promote the general welfare. He asks to be accorded the same rights as other citizens, at least. L. Merveille of Chênée, editor of the *Gazette*, is president of the federation, and heads the list of the signers, followed by the seven other officers.

DUBLIN LETTER.

The Irish Medical Association.

The annual meeting of the Irish Medical Association has come and gone, and all who attended it seem to have enjoyed a pleasant social gathering. It was held in famous Killarney, and was favored with good weather, so it was perhaps natural that those present succumbed to the *dolce far niente* influence of the place, and that the business which brought them together was somewhat neglected. Of the work actually done at Killarney there is little to record. It was decided to discontinue the publication of the "Irish Medical Directory," which had brought much discredit on the association. It was decided also to maintain the present standard of salaries in the Poor Law Medical Service in spite of the fact that it is disregarded by members and non-members alike.

The Coombe Hospital.

The annual meeting of the Coombe Hospital was held July 6. In the annual report it is stated that a total of 17,351 patients were treated in the hospital, and that only five deaths had occurred during the year. The maternity department has been much improved, a suitable waiting ward and a labor theatre having been added. The number of students attending the hospital had passed all previous figures, and many former students had returned for second or third periods of work. The number of probationary nurses also remained satisfactory.

The Royal Hospital for Incurables.

The Royal Hospital for Incurables, in existence for more than one hundred and sixty years, made a new move this year in summoning the first annual meeting of its friends and subscribers. The meeting, which was held at the hospital on July 6, was well attended. The report showed that of the 213 beds in the hospital, the average number occupied through the year had been 205. Of these thirty-nine were reserved for consumptive patients, and thirty-two for cancer. The result of the treatment of consumption in the hospital showed that even among the patients classed as incurable, healthy surroundings, careful nursing, and sufficient feeding were able to cause a great improvement in health and a prolongation of life.

Dr. Smyly Knighted.

The King has conferred the honor of knighthood on Dr. William J. Smyly, the well-known gynecologist and obstetrician. Dr. Smyly is an ex-master of the Rotunda Hospital, an ex-president of the British gynecologic society, and one of the leaders of the Dublin School of Midwifery.

Correspondence

Cocain and Adrenalin in Enucleation of the Eye.

Jacksonville, Fla., July 28, 1905.

To the Editor:—Hemorrhage during enucleation of the eye is often annoying from the moment of the first incision into the conjunctiva until the final separation of the globe from its attachment, and during the operation is frequently so profuse that special forceps have been devised for its control. If, as the patient goes under the anesthetic, a few drops of a 4 per cent. solution of cocain be dropped into the eye, followed in about five minutes by a few drops of solution of adrenalin chlorid 1-1000, it will be found that it will be necessary to use only a minimum quantity of the anesthetic, and that a most remarkable contraction of even the deeper blood vessels will occur, making the operation practically bloodless.

C. Drew, M.D.

Expulsion of Placenta Before Birth of Child.

Ladinas, Cal., July 19, 1905.

To the Editor:—In reply to Dr. Butt's question in The Journal, July 1, p. 60, permit me to report a case of twins occuring in my practice in New Mexico. The patient, Mrs. D., Mexican, aged 25, iv-para, was taken in labor 24 hours before I was called. I administered treatment for the uterine inertia present. About five hours later, a healthy child was delivered by the aid of forceps. In about ten minutes, the second child, in the vertex position, was delivered, pushing ahead his own placenta. He was somewhat asphyxiated but was easily revived, and two weeks later was more vigorous than the other. There was no more hemorrhage than in the ordinary normal case. I concluded that the uterus while contracting to expel the first child had loosened the second child's placenta which might have been placed very near the internal os. I have as yet been unable to learn of a living child who, without any serious hemorrhage, was delivered after its own placenta.

N. E. Richardson.

Marriages

Robert H. Goheen, M.D., to Miss Edith Ewing, at Wooster, Ohio.

Harry D. Murdock, M.D., to Miss Cathleen Crugo, Winton, South Dakota.

James L. Reilly, MD., Chicago, to Miss Caroline Lynch of Peru, Ill., July 28.

Isom H. Phipps, M.D., Needham, Ind., to Miss Bertha Mabel Cutsinger, July 21.

Harold S. Warren, M.D., to Miss Mary Patterson of San Francisco, July 23.

William L. Bell, M.D., U. S. Navy, to Miss Frances Thomas of Astoria, Ore., July 24.

Nils P. Hansen, M.D., Oakland, Neb., to Miss Ruby Latta of Tekamah, Neb., July 28.

Edward L. Burke, M.D., Culdesac, Idaho, to Miss Mae Thayer of Lyons, Ore., July 24.

J. Eliot Foltz, M.D., Hutchinson, Kan., to Miss Gertrude Harrison of Topeka, Kan., July 5.

E. E. Martin, M.D., Del Norte, Colo., to Miss Bertha L. Gregoire of De Witt, Iowa, July 7.

Frank M. Gordoy, M.D., Cusseta, Ga., to Mrs. Johnnie G. O'Neal of Columbus, Ga., July 26.

Bertram M. Bernheim, M.D., Louisville, Ky., to Miss Hilda Hess Marcus, at Baltimore, July 26.

Isadore Dyer, M.D., New Orleans, to Miss Mercedes Louise Percival, at New Orleans, July 31.

William Daniel Snively, M.D., Rock Island, Ill., to Miss Mary Willf of Philadelphia, June 21.

Josiah Morris Slemons, M.D., Baltimore, to Miss Annie M. Goodsill, at Plattsburg, N. Y., August 2.

Hamilton K. Derr, M.D., Hagerstown, Md., to Miss Louisa McCoy, at Washington, D. C., August 3.

Walter Eugene Vogt, M.D., to Miss Henrietta Whitney Parker, both of Brooklyn, N. Y., August 2

Halstead S. Hedges, M.D., Charlottesville, Va., to Miss Pernette Spencer, at Keysville, Va., July 26.

Henry W. Howden, M.D., Philadelphia, to Miss Helena Worsley, of South Bethlehem, Pa., March 21.

Walter B. Gossett, M.D., Louisville, Ky., to Miss Pattie Zollman, of New Albany, Ind., at Louisville, July 25.

Deaths

Thomas J. Maxwell, M.D. Medical Department State University of Iowa, Keokuk, 1861, a member of the American Medical Association; sometime president of the Iowa State Medical Society, member of the Military Tract Medical Association, Tri-State Medical Society of Iowa, Illinois and Missouri, Des Moines Valley Medical Association, American Association of Obstetricans and Gynecologists, and American Association of Railway Surgeons; professor of principles and practice of surgery and clinical surgery at Keokuk Medical College, College of Physicians and Surgeons, Keokuk, Iowa, and previously professor of state medicine and hygiene, anatomy, and obstetrics and gynecology in the same institution; during the Civil War assistant surgeon of the Third Iowa Volunteer Cavalry and surgeon of the One Hundred and Thirty-Eighth U. S. C. T.; one of the most noted surgeons of the middle west, whose method of treating intracapsular fracture of the femur added prominence to his name; died at his home in Keokuk August 1, from cerebral hemorrhage, after an illness of one week, aged 68.

O. Wellington Archibald, M.D. College of Physicians and Surgeons, Keokuk, Iowa, 1871, a member of the American Medical Association and of the Association of Military Surgeons of the United States; formerly acting assistant surgeon, U. S. Army, and superintendent of the Iowa Institution for the Feeble Minded, Glenwood, and the North Dakota Hospital for the Insane, Jamestown; a prominent oculist and aurist of St. Paul, Minn., who had been ill for a few days, fainted while taking a bath, July 28, and drowned, aged 60. The Minnesota State Medical Society and the Ramsey County Medical Society adopted resolutions of eulogy and regret, and Drs. John F. Fulton, Arthur Sweeney, Alexander J. Stone, and William D. Kelly of St. Paul, and Dr. Arthur C. Rogers, Faribault, acted as pallbearers.

James F. McShane, M.D. University of Maryland School of Medicine, Baltimore, 1870; vaccine physician, assistant health commissioner and from 1892 to 1897 health commissioner of Baltimore; associate professor of hygiene at the Baltimore Medical College; a member of the Medical and Chirurgical Faculty of Maryland, died at his home in Baltimore, August 1, from progressive paralysis, after an illness of two years, aged 53.

J. Francis Ross, M.D. Department of Medicine of the University of Pennsylvania, Philadelphia, 1868; in 1876 vice-president of the Medical Society of the State of Pennsylvania; for many years assistant medical director of the Pittsburg and Western Railroad; died at his home in Clarion, Pa., July 28, from cerebral hemorrhage, after an invalidism of one year, aged 61.

James Hedenberg, M.D. Castleton (Vt.) Medical College, 1852, a member of the Massachusetts Medical Society and of the Middlesex South District Medical Society, for several years a member of the Medford school board; died at his home in Medford, Mass., from heart disease, July 26, after an illness of two years, aged 74.

Herman J. Schiff, M.D. College of Physicians and Surgeons in the city of New York, 1884, of New York City, member of the state association and county society, visiting surgeon to St. Marks Hospital and Mount Sinai Dispensary, died suddenly at Alexandria Bay, N. Y., July 24, from acute gastritis, aged 42.

Uriah Long, M.D. Bellevue Hospital Medical College, New York City, 1865, three times coroner of Colfax County, Neb., and twice city physician of Schuyler; a member of the state and county medical societies, died at his home in Schuyler, July 16, from cardiac dropsy, after an illness of a year, aged 75.

George W. Wackerhagen, M.D. College of Physicians and Surgeons in the City of New York, 1869, a member of the Medical Society of Kings County, and of the Brooklyn Pathological Society, and ex-president of the Brooklyn Surgical Society, died suddenly at his home in Brooklyn, July 25, aged 59.

Wiliam Henry Ellery Masser, M.D. Department of Medicine of the University of Pennsylvania, Philadelphia, 1880, formerly an officer in the Navy, and later on a practitioner of Los Angeles, Cal., died July 23, at the Good Samaritan Hospital, Sunbury, Pa., from intestinal obstruction, aged 53.

Alexander P. Nelson, M.D. Rush Medical College, Chicago, 1864, assistant surgeon of the Eighty-fourth Illinois Volunteer Infantry during the Civil War, died at his home in Kirkwood, Ill., July 19, from cerebral hemorrhage, after an illness of one day, aged 77.

Alexander T. Mitchell, M.D. University of Virginia Medical Department, Charlottesville, 1894, of Vicksburg, Miss., a surgeon in the navy during the Spanish-American War, died at St. Joseph's Infirmary, Lexington, Ky., July 18, after an illness of two years.

Francis Newton Gibson, M.D. Dartmouth Medical School, Hanover, N. H., 1861, assistant surgeon and surgeon of the Ninth New Hampshire Volunteer Infantry in the Civil War, died at his home in Lincoln, Neb., July 11, after a long Illness, aged 65.

Lewis Lynn McCabe, M.D. St. Louis Medical College, 1872, a member of the staff of Mullanphy Hospital, St. Louis, for twenty-five years, died at that institution July 27, from disease of the stomach after an illness of six years, aged 55.

P. Edward Anderson, M.D. Jefferson Medical College, Philadelphia, 1859, Surgeon of the Third Virginia Cavalry, C. S. A., during the Civil War, formerly of Rodophil, Amelia County, Va., died at his residence in Richmond, July 2, aged 67.

Alva H. Shelton, M.D. Cincinnati College of Medicine and Surgery, 1886, a member of the American Medical Association, died suddenly at his home in Long Beach, Cal., July 25, from cerebral hemorrhage, aged 40.

George M. Schweig, M.D. Bellevue Hospital Medical College, New York City, 1872, for many years in the service of the New York City Board of Health, died at his home in New York City, July 5, from heart disease, aged 63.

William J. McDowell, M.D. University of Maryland School of Medicine, Baltimore, 1874, a member of the Medical and Chirurgical Faculty of Maryland, died at his home in Baltimore from Bright's disease August 3, aged 51.

Jesse W. Williams, M.D. College of Physicians and Surgeons, Baltimore, 1890, a health warden of Baltimore, died at the City Hospital, Baltimore, from typhoid fever, August 1, after an illness of 20 days, aged 28.

Horatio F. Wood, M.D. Kentucky School of Medicine, Louisville, 1884, formerly of Chicago, died from paresis at the Illinois Eastern Hospital for the Insane, August 3, after an illness of four years, aged 43.

Robert A. Hardin, M.D. University of Louisville Medical Department, 1861, of Savannah, Tenn., died suddenly from heart disease July 31, at Elkmont Springs, Tenn., where he was spending the summer.

Palmer W. Roberts, M.D. Howard University Medical Department, Washington, D. C., 1883, of Washington, D. C., died in Garfield Hospital in that city, July 20, after a protracted illness, aged 63.

Robert H. Ramsey, M.D. Jefferson Medical College, Philadelphia, 1897, fell from a window in Clarksburg, W. Va., July 30, sustaining injuries which caused his death a short time after.

Peter Looney, M.D. Transylvania University Medical Department, said to have been the oldest physician in Henry County, Tenn., died at his home in Paris, July 26, aged 83.

Robert Walter Pearce, M.D. University of Louisville (Ky.) Medical Department, 1852, died at his home in Louisville, July 29, from senile debility, after a lingering illness, aged 75.

John M. Edwards, M.D., University of the State of Missouri Medical School, Columbia, 1883, died at his home in Bevier, Mo., July 31, after a brief illness from gastritis, aged 51.

Robert H. Hightower, M.D. University of Louisville Medical department, 1872, of Dublin, Ga., died at Atlanta a few hours after an operation for pyonephrosis, July 22, aged 50.

C. Paul Knight, M.D., Medico-Chirurgical College of Philadelphia, died at his home in Clinton, N. J., from tuberculosis, July 18, after an illness of fifteen months, aged 30.

James F. McDougall, M.D. State Certificate Tennessee, 1889, one of the oldest practitioners of Western Tennessee, died at his home in Savannah, July 15, aged 80.

John C. Mundy, M.D. University of Virginia Medical Department, Charlottesville, 1853, died at his home in Allen's Creek, Va., July 13, from heart disease, aged 75.

Walter S. Hay, M.D. Medical College of the State of South Carolina, Charleston, 1874, of Allendale, S. C., a Confederate veteran, died at Aiken, S. C., July 29.

Isaiah White, M.D. New York University, New York City, 1885, one of the oldest practitioners of Utah, died at his home in Salt Lake City, July 23, aged 77.

Samuel Pagin, M.D. Chicago, 1870, died at his home in Goshen, Ind., from cerebral hemorrhage, July 26 after an illness of four days, aged 76.

John Yauney, M.D. Albany (N. Y.) Medical College, 1857, died at his home in Ephratah, N. Y., July 24, after an illness of one year, aged 77.

George Ayres Hewitt, M.D. Jefferson Medical College, Philadelphia, 1877, of Philadelphia, Pa., died at Cape May, N. J., August 1, aged 57.

William W. Clark, M.D. Albany (N. Y.) Medical College, 1894, was drowned in a creek near his home in Maine, N. Y., July 26, aged 36.

Ferdinand G. Oehme, M.D. University of Leipsig, 1892, formerly of Roseburg, Ore., died at his home in Portland, Ore., July 23, aged 79.

David T. Kyner, M.D. Rush Medical College, Chicago, 1856, died at his home in Blue Mound, Ill., July 23, after a long illness, aged 72.

Wesley Light, M.D. Chicago, 1901, died at his home near Freedom, Ind., July 13, from paralysis, after a long illness.

Book Notices

Atlas and Text-Book of Topographic and Applied Anatomy. By O. Schultze. Edited with Additions by G. D. Stewart, M.D. With 125 Illustrations, 85 in Colors. Cloth. Pp. 189. Price, $5.50 net. Philadelphia: W. B. Saunders & Co. 1905.

In this one work an atlas and a text-book are excellently combined. It treats of the anatomy of the human body in its most practical aspects. The author well understands the method of clinical application of a knowledge of anatomy and the entire book is written with this in mind. The illustrations are exceptionally clear and are of a high order. There are many colored drawings of topographical relations which will be of great value to the general practitioner as well as to the surgeon. The translation is excellent and the American editor has added some instructive cuts.

An Introduction to Chemical Analysis, for Students of Medicine, Pharmacy and Dentistry. By Elbert W. Rockwood, M.D., Ph.D., Professor of Chemistry and Toxicology and Head of the Department of Chemistry in the University of Iowa. Second Revised Edition. Illustrated. Cloth. Pp. 255. Price, $1.50 net. Philadelphia: P. Blakiston's Son & Co. 1905.

This work, now in its second edition, has been adopted by the author for his class work, and is designed for students in three branches of medicine, viz.: medical, dental and pharmaceutical. The exercises are interleaved with series of questions suggestive to further reference and study. The reactions are also chosen to illustrate chemical incompatibilities of medicinal substances as well as antidotes for poisons. Testing of water, detection of poisons and blow-pipe analysis are also included.

The Detection of Poisons and Strong Drugs, Including the Quantitative Estimation of Medicinal Principles in Certain Crude Materials. By Dr. Wilhelm Autenrieth, Professor in the University of Freiburg. Authorized Translations from the Third Enlarged German Edition. By William H. Warren, Ph.D., Professor of Chemistry, Medical Department of Washington University, St. Louis, Mo. Seventeen Illustrations. Cloth. Pp. 222. Price, $1.50 net. Philadelphia: P. Blakiston's Son & Co. 1905.

This is a translation of the well-known German work and therefore retains the processes of the German Pharmacopeia, which the author suggests may be valuable for comparison with those of the U. S. Pharmacopeia. The distribution and elimination of poisons in the animal body are briefly considered, what organs should be examined, what alteration poison undergoes in metabolism, and in what form it is eliminated. Biologic methods used in detecting arsenic and human blood are also included.

The Influence of Growth on Congenital and Acquired Deformities. By Adoniram Brown Judson, A.M., M.D., Orthopedic Surgeon to the Out-patient Department, New York Hospital, 1878-1903. Profusely Illustrated. Cloth. Pp. 276. Price, $2.00. New York: Wm. Wood & Co. 1905.

This book is a brief review of orthopedic surgery with special consideration of the effect of growth. Dr. Judson quotes Hilton as saying that "repair is but the repetition of growth;" natural or artificial rectified growth may thus be counted on in the child or adolescent to substitute for repair, or to supplement it, in the treatment of orthopedic deformities and diseases. The author does not claim to present matter essentially new; the point of view, however, is new and instructive, and the ordinary features of classical orthopedic surgery are grouped around this center in such a way as to make the book *interesting and useful.*

Queries and Minor Notes

Anonymous Communications will not be noticed. Queries for this column must be accompanied by the writer's name and address, but the request of the writer not to publish name or address will be faithfully observed.

ALLEGED UNSCIENTIFIC STATEMENTS BY PHYSICIANS.

Dr. L. sends us a newspaper clipping which narrates the remarkable case of a woman who had "been sick from stomach trouble three months," and who was relieved during a "coughing fit" of a snake eight inches long. The paper says that "Dr. —— —— is the attending physician. He says Mrs. Smith probably swallowed a snake's egg while drinking water." Our correspondent asks: "Is it not time that such stories should cease? Or at any rate, the time has certainly come when physicians' names should not be published giving credence to such a physiologic impossibility as that of a snake's egg hatching inside a living stomach.

Answer.—It is never safe to charge up against a brother physician anything that a newspaper may charge him with doing or saying until the story has been reliably confirmed. White is often changed to black and yes to no in passing over the gossiping tongues of ignorant persons. On the other hand, in the case our correspondent submits, it might very well be that someone in this way is settling a grudge against the victimized doctor. As newspaper editors and physicians advance in educational attainments such instances will become rarer.

FEES OF ATTENDING PHYSICIAN AND CONSULTANTS WHO OPERATE.

——, August 1, 1905.

To the Editor:—I would like very much to have your decision in the following case: Dr. A. was called to see a case, and after careful examination pronounced it a severe case of appendicitis, and advised immediate operation. The family agreed, but desired consultation. Dr. B. was called in and agreed with the diagnosis. The family, however, insisted that Dr. B. should do the operation. Dr. A. agreed and assisted in the operation. The question now arises, is not Dr. A. entitled to the same compensation as Dr. B., Dr. A. having made the diagnosis and having assisted in the operation, and having treated the case until recovered?

Answer.—This query has to be divided. (1) So far as concerns the relative claims of Dr. A. and Dr. B., misunderstanding and friction can only be avoided by frank agreement, preferably in advance, between the physicians and the person who is to pay the bills. Each such case must be settled on its merits by those interested. In the present instance, if it is the patient who refuses properly to recompense Dr. A., let Dr. A. and Dr. B. together agree on proper fees. and in a friendly way lay the matter before the patient, if need be calling for help from the county medical society. If Dr. B. objects to Dr. A. charging an equal fee an impartial medical arbitrator should be asked to adjudicate the case. It is important to present a united front and to secure a good reasonable compensation for professional services. (2) How nearly equal in a given case shall be the fees of the operating surgeon and of the family physician who makes the diagnosis? Everywhere the profession is wrestling with this problem, but no universally applicable solution has yet been propounded. Perhaps the internist and the surgeon never will quite agree, but for the good of the guild they must seem to. There is a strong and growing sentiment that favors a fee for the family physician commensurate with that of the surgeon whom he calls. A few internists already are able to maintain this position, but the public is not yet generally sympathetic. It is this demand that has led some to adopt that wretched makeshift—the wholly immortal secret division of the surgeon's fee. Direct dealing must and will prevail. Dr. A. and Dr. B. should be members of their county medical society, and they and their society should face the question, deciding on the approximate solution that is locally most applicable.

Association News

Official Minutes of the Sections.

The following are the official minutes of the Section on Stomatology, the Section on Laryngology and Otology, and of the Section on Pharmacology and Therapeutics at the Portland Session, July 11-14, 1905. The minutes of the other sections were printed July 29. The minutes of the House of Delegates and of the General Meetings were printed July 22.

Section on Stomatology.

TUESDAY, JULY 11—AFTERNOON.

The Section was called to order at 2:40 p. m. by the Chairman, Dr. Vida A. Latham, Chicago.

The report of the Secretary was read.

Drs. Marshall and Schamberg [illegible] the places of Drs. Peck and Eames on the [illegible]

The address of the chairman [illegible] Dr. Latham on "The Relationship of the Ora[illegible]d Surgery." Discussed by Drs. Rhein, Tal[illegible] Marshall, Brown and Latham.

The next order was a symposium on dental education. The following papers were read:

"A Common Ground for Medicine and Dentistry," by Frank L. Platt, San Francisco.

"The Physician as a Dentist," by Calvin W. Knowles, San Francisco.

"The Physician's Duty to the Child from a Dental Standpoint," by Alice M. Steeves, Boston.

"The Medical Relations of Certain Conditions of the Mouth," by L. Duncan Bulkley, New York City.

These four papers were discussed by Drs. Latham, Schamberg, Brown and Rhein.

Dr. M. L. Rhein of New York offered resolutions, to be laid before the House of Delegates, as to abolishing the contract surgeon in the Army. (These resolutions appear in full in The Journal, July 22, page 280.)

Dr. Brown moved that the resolutions be concurred in by the Section on Stomatology, and referred to the secretary of the Section to send to the House of Delegates if thought best.

This motion was seconded by Dr. Baldwin and discussed by Drs. Baldwin, Brown, Talbot, Schamberg and Rhein. Carried.

Committee on Nominations was appointed, consisting of Dr. G. V. I. Brown, Dr. M. I. Schamberg and Dr. F. L. Platt, to report Thursday.

WEDNESDAY, JULY 12—AFTERNOON.

Section was called to order at 2:18 p. m. by the chairman.

"Dentistry of To-morrow," by H. P. Carlton, San Francisco.

"What Will Probably Be the Dental Educational Standard for the Coming Decade," by Dr. C. C. Chittenden, Madison, Wis.

These two papers were discussed by Drs. Platt, Rhein, Levings, Schamberg, Brown and Carlton.

"Surgical Bacteriology of the Mouth," by Dr. A. H. Levings, Milwaukee, Wis. Discussed by Drs. Marshall, Brown, Schamberg, Rhein, Latham, Carlton and Levings.

"The Treatment of Suppurative Affections of the Face and Neck, Emanating from the Mouth," by Dr. M. I. Schamberg, Philadelphia. Discussed by Drs. Marshall, Brown, Levings, Rhein, Latham and Schamberg.

"The Etiology of Tooth and Nail Corrugations," by Dr. G. Lenox Curtis, New York. Discussed by Drs. Fletcher, Talbot, Schamberg, Marshall and Curtis.

THURSDAY, JULY 13—MORNING.

The Section was called to order at 10 a. m. by the chairman.

"To What Extent Are Teeth Necessary to the Human Being," by Dr M. H. Fletcher, Cincinnati. Discussed by Drs. Talbot, Platt, Brown, Schamberg, Baldwin, Rhein and Latham.

"Fatal Oral Pathologic Conditions," by Dr. G. V. I. Brown, Milwaukee, Wis.

"Surgical Aspects of Disturbed Dentition of the Third Molar," by Dr. M. L. Rhein, New York City.

These two papers were discussed by Drs. Talbot, Schamberg, Platt, Marshall, Brown and Rhein.

THURSDAY, JULY 13—AFTERNOON.

A paper entitled "The Ossification of the Lower Jaw," by Edward Fawcett, Bristol, England, was read.

On motion a vote of thanks was extended to Dr. Fawcett for his excellent paper.

"Ankylostemiasis and Tongue Pigment," by Dr. T. M. Russell Leonard, Grenada, British West Indies. Discussed by Drs. Latham and Talbot.

"Tooth Genesis in Man," by H. W. Marett Tims, London, Eng.

"The Roentgen Rays in Dentistry," by Dr. M. Kassabian, Philadelphia.

"The Oral Manifestation of Diabetes Mellitus," by Dr. Herman Prinz, St. Louis.

The report of the Committee on Nominations was presented as follows: Chairman, C. F. Allen, Newburgh, N. Y.; vice-chairman, H. P. Carlton, San Francisco; secretary, Eugene S. Talbot, Chicago; member of House of Delegates, A. E. Baldwin, Chicago. On motion the report was adopted.

On motion the Section then adjourned *sine die.*

Section on Laryngology and Otology.

TUESDAY, JULY 11.

The Section was called to order at 2:20 p. m.

Chairman's address, Robert C. Myles, New York.

"The Treatment of Empyemata of the Maxillary Antrum Through the Nose," George L. Richards, Fall River, Mass. Discussed by Drs. Otto T. Freer, Chicago; Frank W. Hilscher, Spokane; G. P. Pond, San Francisco; L. C. Cline, Indianapolis; C. F. Welty, San Francisco; W. S. Anderson, Detroit; S. L. Ledbetter Birmingham; A. G. Greenstreet, Seattle; A. DeVilbiss, Toledo; J. H. Martindale, Los Angeles; Robert C. Myles, New York, and George [illegible]

[illegible] er Intranasal [illegible] rrhages)". [illegible] Discussed [illegible] S. Anderson, [illegible] San Francisco; Frank W. Hilscher, Spokane; A. A. Green, Anniston, Ala.; Otto T. Freer, Chicago; H. Foster, Kansas City; Robert C. Myles, New York, and Kaspar Pischel.

Dr. Kaspar Pischel, San Francisco, moved that the chairmen of the Sections [illegible] yngology and Otology be asked to [illegible] sections so that they will not inter[illegible] that the members may attend both [illegible] conded, and was discussed by Drs [illegible] C. Myles, K. Pischel and L. C. Cli[illegible] on the table.

Dr. George [illegible] presented the following resolution [illegible]

Resolved, That the Section on Laryngology and Otology requests the House of Delegates to make arrangements to have the members of sections present at sessions of the A. M. A. receive the bound volumes of the transactions of their respective sections without the charge of $1.00 heretofore collected, and that said transactions be delivered to such members.

The motion was seconded, unanimously carried and referred to the House of Delegates. (See The Journal, July 22, page 285.)

On motion, it was decided to omit the annual smoker and dinner of the section.

WEDNESDAY, JULY 12—MORNING.

"A Demonstration [illegible] the Window Resection Method of the [illegible] of the Nasal Septum," O. T. Freer, Chi[illegible] W. S. Anderson, Detroit, Mich.; Hill Hastings, Los Angeles; George L. Richards, Fall River, Mass.; George F. Cott, Buffalo, N. Y.; G. P. Pond, San Francisco; L. A. Leland, Boston; A. A. Greene, Anniston, Ala.; A. DeVilbiss, Toledo, Ohio; J. F. Barnhill, Indianapolis; Robert C. Myles, New York, and Dr. Freer.

The Nominating Committee, through Dr. George L. Richards, reported the following nominations: Chairman, O. T. Freer, Chicago; Secretary, W. S. Bryant, New York; Delegate, R. C. Myles, New York.

WEDNESDAY, JULY 12—AFTERNOON.

"The Correction of Saddle Nose by Bone Implantation," Cullen F. Welty, San Francisco. Discussed by Drs. W. S. Anderson, Detroit, Mich.; O. T. Freer, Chicago; Hal Foster, Kansas City, Mo.; W. W. Pennell, Mt. Vernon, Ohio; Robert C. Myles, New York, and Dr. Welty.

"Capital Operations for the Cure of Tinnitus Aurium," W. S. Bryant, New York. Discussed by Dr. J. F. Barnhill, Indianapolis.

"Diagnosis of the Intracranial [illegible] to the Middle Ear Suppurations." John F. [illegible]

"Four Cases of Mastoid [illegible] pening the Antrum; Recovery. A Fifth, Periostitis Only, and a Sixth, Destruction of Inner Table of Skull. George F. Cott, Buffalo.

These two papers were discussed by Drs. George L. Richards, Fall River, Mass.; Hill Hastings, Los Angeles; Cullen F. Welty, San Francisco; A. DeVilbiss, Toledo; Kaspar Pischel, San Francisco; Frank W. Hilscher, Spokane; W. W. Murphy, Los Angeles;

G. P. Pond, San Francisco; L. A. Leland, Boston; S. L. Ledbetter, Birmingham, Ala.; Robert C. Myles, New York, and Drs. Barnhill and Cott.

THURSDAY, JULY 13—MORNING.

"Two Cases of Sinus Thrombosis, with Masked Symptoms; Mastoid Operation; One Death; One Recovery," Hill Hastings, Los Angeles, Cal. Discussed by Drs. George L. Richards, Fall River, Mass.; George F. Cott, Buffalo, N. Y.; Cullen F. Welty, San Francisco; W. H. Roberts, Pasadena, Cal.; H. Stillson, Seattle; L. A. Leland, Boston; W. W. Murphy, Los Angeles; John F. Barnhill, Indianapolis; Robert C. Myles, New York, and Dr. Foster.

"Exhibition of a New [illegible] Straw, Marshfield, Ore. Discussed by [illegible] York; L. C. Cline, Indianapolis, and [illegible]lis.

It was moved by Dr. [illegible] River, Mass., and seconded by Dr. Joh[illegible] that the report of the Committee on Nominations be accepted and acted on by ballot. Carried unanimously. On motion of Dr. A. DeVilbiss, Toledo, and duly seconded, the ballot was cast by Dr. George L. Richards, and the following were declared the officers for the Section for the ensuing year: Chairman, Otto T. Freer, Chicago; Secretary, W. S. Bryant, New York; Executive Committee, George L. Richards, Fall River, Mass.; John F. Barnhill, Indianapolis, and Robert C. Myles, New York.

Section on Pharmacology and Therapeutics.

TUESDAY, JULY 11.—AFTERNOON.

Section called to order at 2:30 p. m. by the Chairman, Dr.. Heinrich Stern, New York City.

The Chairman's Address was read. Discussed by Drs. Cottel, Lewis, Kelly and Stern.

It was announced that Dr. Homer I. Keeney had been appointed by the local committee as the member to look after the comfort of visiting members.

Certificate of credentials was presented from American Pharmaceutical Association.

Drs. William C. Wescott, Atlantic City, N. J., and Charles O. Jones, Osceola, Mo., on application, were elected to membership.

Report of Committee on Proprietary Medicines was read by the Secretary. Discussed by Drs. Waugh, Reilly, Chamberlin and Cottel.

Report of Committee to Aid Postoffice Department in Excluding Objectionable Advertisements was read by the Secretary. Dr. Lewis moved that a committee of three be appointed to consider these reports, to accept them, and to draw up resolutions founded on thei[illegible]mitting them to the Section for approval as [illegible]l carried.

Drs. Lewis, [illegible] were appointed as such a committee.

Dr. Chamberlin offered the following resolution:

Resolved, That Section 1, Chapter 1, Book 1, of the By-Laws, be amended so as to read: "A member in good standing of the association of the state in which he resides, who is not in any manner connected with the business of manufacturing pharmacy, or a medical officer of the U. S. Army, of the U. S. Navy, or of the U. S. Public Health and Marine-Hospital Service, may become a member of the American Medical Association by presenting to the general secretary (1) satisfactory evidence of one of the above qualifications; (2) written application for membership on the prescribed form, and (3) the annual dues."

Dr. Chamberlin moved that the representative of the Section on Pharmacology and Therapeutics in the House of Delegates be directed to offer the resolution at the next meeting of the House of Delegates. Seconded.

After discussion by Drs. Lewis, Frick, and the Secretary, and a few remarks by the Chairman, Dr. Chamberlin withdrew his motion, and after further remarks by the Secretary, requested to have his motion reinstated. No vote was taken, however.

None of the Executive Committee being present. Drs. Waugh, Dickinson and, Reilly were appointed an Executive Committee *pro tem.*

The Secretary offered the following resolution, and moved that the Delegate to the House of Delegates be directed to present it before that body:

Resolved, That Book 4, Chapter 2, Section .12, be amended so as to read: "Before only two (instead of one) sections at any annual session."

Motion seconded and carried.

WEDNESDAY, JULY 12.—MORNING.

The Section was called to order at 9.30.

The Chairman appointed as a Nominating Committee Drs. J. V. Kelly, John T. Nagle and H. E. Lewis.

Dr. Bryant read a paper entitled "Common-sense Nasal Therapeutics." Discussed by Drs. Reilly, Waugh, Lewis and Bryant.

Dr. Daniel R. Brower of Chicago read a paper on "Therapeutics of Neuritis." Discussed by Drs. Stern, Lewis, Jones and Brower.

Dr. Chamberlin moved that the delegate be instructed to work with the utmost earnestness for the restoration of the title of this Section as the Section on Pharmacology and Therapeutics. Seconded by Dr. Waugh. Discussed by the Secretary and the Chairman, after which the motion was put and carried.

Dr. Ashley read a paper entitled "Therapeutics of Flat-foot." Discussed by Drs. Reilly, Brower, Lewis, Abbott, Cottel, Waugh, Foss and Ashley.

Dr. Thomas F. Reilly of New York City read a paper on the "Therapeutics of Lupulin." Discussed by Drs. Abbott, Foss, Waugh, Stern, Hallberg and Reilly.

Dr. William F. Waugh, Chicago, read a paper entitled "Arbutin." Discussed by Drs. Hallberg, Foss, Abbott, Cottel, Stern, and Waugh.

Dr. Waugh took the chair, and Dr. Stern read a paper entitled "Sixteen Years' Experience with Formic Acid as a Therapeutic Agent," which was discussed by Drs. Abbott, Reilly, Hallberg, Waugh, and Stern.

The Secretary announced the meeting this afternoon of the Pharmaceutical Congress at the Lewis and Clark Exposition.

An invitation was read from the British Columbia Medical Association.

The Secretary announced that printed copies of the Transactions of the Section could be procured for $1.00, provided seventy-five were ordered in advance.

THURSDAY, JULY 13.—AFTERNOON.

The session was called to order at 2:30, by Chairman Stern.

The Nominating Committee reported in favor of Dr. Thomas F. Reilly, New York, for Chairman; Dr. William Frick, Kansas City, Mo., Vice-Chairman; Dr. C. S. N. Hallberg, Secretary; Dr. Heinrich Stern, Delegate. Ballots were cast and the nominees elected.

Dr. Albert Schneider, San Francisco, read a paper entitled "Uncertain Origin of Many Drugs." Discussed by Drs. Wahrer, Calvin and McDonnell.

Dr. William M. Searby, San Francisco, read a paper on "The U. S. Pharmacopeia—Its Functions."

Dr. C. S. N. Hallberg, Chicago, read a paper entitled "The U. S. Pharmacopeia—Advance in Pharmacy."

Dr. Chamberlain moved that Dr. Abbott read Dr. Tracy's paper, in Dr. Tracy's unavoidable absence. Dr. Abbott read as requested.

These three papers were discussed by Drs. Chamberlain, Lewis, Calvin, Abbott, Stern, Schneider, Searby, and Hallberg.

Dr. H. E. Lewis read a paper on the "Etiologic and Therapeutic Relation of the Pancreas in the Development of Tuberculosis." Discussed by Drs. Foss, Abbott, Searby, Stern and Lewis.

Report of the Committee on Resolutions was read by Dr. Lewis, who presented resolutions:

Resolved, That it is the sense of the Section on Pharmacology and Therapeutics that all proprietary products should have titles as nearly descriptive as possible of their active constituents or elementary composition; and that, while we deplore the present necessity of trade names and titles, we recognize that the evils of substitution are so prevalent that in the interests of honest progressive pharmacy the use of such names and titles can not be avoided. It is, however, the further opinion of this Section that many, if not all, of the objectionable features of proprietary products can be eliminated, first, by the use in connection with the trade name, of some subtitle which will express in scientific terms the nature and character of its composition; and second, by the use on the label or in the disseminated literature, of a descriptive formula which will exhibit the character and proportions of the active constituents.

WHEREAS, The U. S. Pharmacopeia has established standards of nomenclature and orthography which appeal to science and scientific methods: therefore be it

Resolved, That the Section on Pharmacology and Therapeutics respectfully urges the desirability of the American Medical Association accepting the U. S. Pharmacopeia as the standard of nomenclature and orthography in all its transactions and publications.

WHEREAS, The Postmaster-General of the United States and the Secretary of Agriculture are making laudable efforts to restrict or to exclude all obnoxious, fraudulent and dangerous substances from the United States mail: and

WHEREAS, These efforts are nullified to a certain extent by abstruse or incomplete laws, or misunderstanding in their interpretation; therefore, be it

Resolved, That the Section on Pharmacology and Therapeutics of the American Medical Association extend to the Postmaster-General and the Secretary of Agriculture our sincere appreciation of their efforts in behalf of honest pharmacy and assure them that this Section is in accord with their methods and objects; and be it

Resolved, That the Section on Pharmacology and Therapeutics of the American Medical Association emphasize to our legislators and postoffice authorities the necessity of denying to every fraudulent and dishonest firm the use and privileges of the United States mails in every way and particular; and further be it

Resolved, That the Section on Pharmacology and Therapeutics of the American Medical Association urge on the postoffice authorities the desirability of a proper regulation for the protection of the people which will make necessary the proper and plain labeling of all poisonous tablets, powders or other substances before admitting the same to the privileges of the United States mails.

H. EDWIN LEWIS,
C. S. CHAMBERLIN,
W. F. WAUGH.

Dr. Foss moved that the resolutions presented be adopted.

Discussed by Drs. Abbott, Foss, Lewis, Hallberg.

Motion carried.

Dr. Lewis moved that the Secretary of the Section submit to the Board of Trustees the matter concerning *ovoferrin*, asking them to investigate it and the position of Dr. Robinson with reference to it.

Discussed by Drs. Lewis, Abbott, Chamberlain and Hallberg, and motion carried.

Dr. Foss reported the proceedings of the House of Delegates relating to this Section.

A vote of thanks was extended to the retiring Chairman, Dr. Stern.

PORTLAND REGISTRATION.

List of Members, Associate Members and Guests Who Registered at Portland, Oregon.

The total registration at the Portland session was 1,678. We print below the names and addresses of the members, associate members and guests who registered. The names that are starred are of guests. Preceding the names are two summaries: one giving the registration by states and one by sections. In the latter are mentioned "Miscellaneous, 100." This includes those who have not yet forwarded credentials for membership. These are, therefore, not listed by name and are not counted in the summary by states.

REGISTRATION BY SECTIONS.

Practice of Medicine	494
Obstetrics and Diseases of Women	168
Surgery and Anatomy	443
Hygiene and Sanitary Science	48

Ophthalmology	105
Diseases of Children	46
Stomatology	23
Nervous and Mental Diseases	58
Cutaneous Medicine and Surgery	32
Laryngology and Otology	34
Materia Medica, Pharmacy and Therapeutics	26
Pathology and Physiology	18
Registered without specifying any particular section	82
Miscellaneous	97
Total	1,678

REGISTRATION BY STATES.

Alabama	8	Nebraska	20
Arizona	6	New Hampshire	1
Arkansas	9	New Jersey	12
California	164	New Mexico	5
Colorado	32	New York	50
Connecticut	10	Nevada	3
District of Columbia	9	North Carolina	1
Florida	1	North Dakota	10
Georgia	4	Ohio	60
Hawaii	2	Oklahoma	3
Idaho	31	Oregon	217
Illinois	123	Pennsylvania	98
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Massachusetts	30	Washington	156
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Section on Ophthalmology.

Adams, A. L., Jacksonville, Ill.
Alway, Robert D., Aberdeen, S. D.
Bach, James A., Milwaukee, Wis.
Beaudoux, H. A., Fargo, N. D.
Bentley, Frederick, Seattle, Wash.
Black, J. A., San Francisco, Cal.
Briggs, Wm. Ellery, Sacramento, Cal.
Brobst, Chas. H., Peoria, Ill.
Bradfield, J. A. L., LaCrosse, Wis.
Brown, E. V. L., Chicago, Ill.
Brown, Felix Manning, Hopkinsville, Ky.
Brown, Edward J., Minneapolis, Minn.
Buchanan, Mary, *Philadelphia*, Pa.
Bulson, *Albert E., Jr., Fort* Wayne, Ind.
Bullitt, James B., University, Miss.
Carr, George W., Wilkesbarre, Pa.
Carrico, James Huston, Woodburn, Ore.
Connor, Leartus, Detroit, Mich.
Connell, E. De Witt, Portland, Ore.
Crane, C. S., Grand Forks, N. D.
Craig, Alex. R., Columbia, Pa.
Crocker, Fred S., Chicago, Ill.
Croskey, John Welsh, Philadelphia, Pa.
De Beck, David, Seattle, Wash.
Dial, E. A., Santa Barbara, Cal.
Dickey, John L., Wheeling, W. Va.
Dickson, J. F., Portland, Ore.
Donovan, Jno. A., Butte, Mont.
Eaton, Frank B., San Francisco, Cal.
Ellis, M. H., Albany, Ore.
Featherston, J. S., Macon, Miss.
Findley, Marcus C., Grant's Pass, Ore.
Frankhauser, Fremont W., Reading, Pa.
French, C. Gertrude, Portland, Ore.
Fringer, W. R., Rockford, Ill.
Gordon, R. N., Seattle, Wash.
Grant, Jas G., Akron, Ohio.
Grannis, E. H., Menomonie, Wis.
Greene, Allen A., Anniston, Ala.
Grove, *Benjamin H., Buffalo,* N. Y.
Hager, W. A., South Bend, Ind.
Hazlett, Edw. E., Abilene, Kan.
Heath, Frederic C., Indianapolis, Ind.
Herbert, J. Fred'k, Philadelphia, Pa.
Herron, J. T., Jackson, Tenn.
Hibbard, William Edward, Pasadena, Cal.
Hilscher, Frank W., Spokane, Wash.
*Hirschberg, T., Berlin, Germany.
Holmes, Christian R., Cincinnati, Ohio.
Hulen, Vard H., San Francisco, Cal.
Jackson, Edward, Denver, Col.
Jordan, P. A., San Jose, Cal.
Johnston, Wilson, Colfax, Wash.
Kirkpatrick, Milo, Portland, Ore.
Kistler, O. F., Wilkesbarre, Pa.
Kniskern, E. L., Centralia, Wash.
Knapp, C. C., Zanesville, Ohio.
La Motte, Henry, Salt Lake City, Utah.
Ledbetter, Samuel L., Birmingham, Ala.
Lewis, E. J., Sauk Center, Minn.
Lindley, D. C., New Castle, Pa.
Matheny, Ralph C., Galesburg, Ill.
Magee, R. S., Topeka, Kan.
McClenathan, J. C., Connellsville, Pa.
Miller, Frank W., Los Angeles, Cal.
Moore, Thos. W., Huntington, W. Va.
Mosgrove, Anna M., San Francisco, Cal.
Murphy, W. W., Los Angeles, Cal.
Nagel, C. S. G., San Francisco, Cal.
Neeper, E. R., Colorado Springs, Col.
Nunn, Richard, Portland, Ore.
Parker, Mary E., Portland, Ore.
Park, George, Sioux City, Iowa.
Pischel, Kaspar, San Francisco, Cal.
Pond, Gardner Perry, San Francisco, Cal.
Posey, Wm. Campbell, Philadel- Pa.
Powell, Barton J., Stockton, Cal.
Renaud, Geo. L., Detroit, Mich.
Reynolds, Dudley S., Louisville, Ky.
Risley, Samuel D., Philadelphia, Pa.
Roberts, W. H., Pasadena, Cal.
Rogers, Albert Clark, Los Angeles, Cal.
Savage, G. C., Nashville, Tenn.
Shoemaker, Wm. T., Philadelphia, Pa.
Smith, Eugene, Detroit, Mich.
Snyder, Walter H., Toledo, Ohio.
Stauffer, Fred, Salt Lake City, Utah.
Stevens, Cyrus Lee, Athens, Pa.
Stevenson, Mark D., Akron, Ohio.
Stillson, Hamilton, Seattle, Wash.
St. John, Samuel B., Hartford, Conn.
Straw, E. E., Marshfield, Ore.
Sutton, E. O., Tacoma, Wash.
Taylor, Lewis H., Wilkesbarre, Pa.
Thomson, R. L., Spokane, Wash.
Tyson, Henry H., New York, N. Y.
Vance, Willis O., Chicago, Ill.
Walker, J. R., Fresno, Cal.
Weeks, John E., New York, N. Y.
Wicks, Joseph L., Evanston, Wyo.
Wiener, Meyer, St. Louis, Mo.
Williams, Charles H., Boston, Mass.
Wing, Peleg B., Tacoma, Wash.
Wood, William L., Portland, Ore.
Zentmayer, William, Philadelphia, Pa.

Section on Diseases of Children.

[illegible] Ohio.
[illegible] Ill.
[illegible]ont.
[illegible] Fran-[illegible]
Cook, John C., Chicago, Ill.
Cotton, Alfred C., Chicago, Ill.
Curlin, P. V., Denver, Col.
Dart, Leslie O., Minneapolis, Minn.
De Witt, C. H., Glenwood, Iowa.
Ducote, C. J., Cottonport, La.
Fairbanks, Arthur Willard, Boston, Mass.
Furman, Davis, Greenville, S. C.
Garrison, Harriet E., Dixon, Ill.
Gray, Ethel L., Portland, Ore.
Grinnan,, St. Geo. T., Richmond, Va.
Gunn, John W., Butte, Mont.
Harrell, T. M., Round Rock, Texas.
Hawke, C. E., Portland, Ore.
Hesser, George Turner, Folsom City, Cal.
Holcombe, Luman C., Milton Vt.
Hollopeter, W. C., Philadelphia, Pa.
Hollister, O. C., Portland, Ore.
Hunter, Alexander, Kendrick, Idaho.
Lindsay Kate, Boulder, Col.
Lippe, Meyer J., St. Louis, Mo.
MacLeod, Alexander F., Spokane,
Majors, Ergo A., Soledad, Cal.
McClanahan, Harry M., Omaha, Neb.
McGavin, Jessie M., Portland, Ore.
Michael, May, Chicago, Ill.
Minton, E. W., Oakdale, Neb.

Morse, John Lovett, Boston, Mass.
Newell, Mary B., Onarga, Ill.
Newman, De Witt C., Spokane, Wash.
Ostheimer, Maurice, Philadelphia, Pa.
Parrish, John W., Brooklyn, N. Y.
Pohl, Esther C., Portland, Ore.
Ringo, R. E., Pendleton, Ore.
Roberts, W. P., Cleghorn, Iowa.
Rosenthal, Edwin, Philadelphia, Pa.
Silver, Lewis M., New York, N. Y.
Smith, Alice M., Tacoma, Wash.
Snyder, J. Ross, Birmingham, Ala.
Tolman, Julia, Arlington, Mass.
Vinson, L. T., Kenova, W. Va.
Wahrer, C. F., Ft. Madison, Iowa.
Wills, G. M., Portland, Ore.

Section on Stomatology.

Allan, Chas. F., Newburgh, N. Y.
Baldwin, A. E., Chicago, Ill.
Brown, Geo. V. I., Milwaukee, Wis.
Buck, Louis, Portland, Ore.
Bulkley, L. Duncan, New York, N. Y.
Carlton, Harry P., San Francisco, Cal.
Chance, Arthur W., Portland, Ore.
Dodson, Z. T., Cleveland, Wash.
Deuville, J. C., North East, Pa.
Fletcher, J. R., Winnetka, Ill.
Finck, T. D., Louisville, Ky.
Latham, Vida A., Chicago, Ill.
Levings, A. H., Milwaukee, Wis.
Lindsay, John J., Manchester, Iowa.
Marshall, John S., U. S. A., San Francisco, Cal.
Moyer, S. R., Monroe, Wis.
Platt, Frank L., San Francisco, Cal.
Ristine, H. G., Fort Dodge, Iowa.
Rhein, M. L., New York, N. Y.
Rowell, Haynie, Kearney, Mo.
Schamberg, Morris I., Philadelphia, Pa.
Steeves, Alice M., Boston, Mass.
Talbot, Eugene S., Chicago, Ill.
Wooley, E. W., Winona, Minn.

Section on Nervous and Mental Diseases.

Barstow, J. M., Council Bluffs, Iowa.
Boys, William, Portland, Ore.
Brainerd, H. G., Los Angeles, Cal.
Bridge, Norman, Los Angeles, Cal.
Brower, D. R., Chicago, Ill.
Burnham, F. R., San Diego, Cal.
Carrithers-Calvin, Jessie, Ft. Wayne, Ind.
Caples, B. M., Waukesha, Wis.
Clark, David R., Dearborn, Mich.
Coe, Henry Waldo, Portland, Ore.
Cook, Geo. F., Oxford, Ohio.
Crothers, Thomas D., Hartford, Conn.
Dawson, Wm. J. G., Eldridge, Cal.
Drew, Charles A., Bridgewater, Mass.
Ely, Frank A., Des Moines, Iowa.
Gasser, Herman, Platteville, Wis.
Gifford, Alfred, Lawrence, Kan.
Gillespie, Robert L., Portland, Ore.
Gilbert, J. Allen, Portland, Ore.
Hawkins, J. H., St. Helena, Cal.
Hersman, C. C., Pittsburg, Pa.
Hessler, Robert, Logansport, Ind.
Holtzapple, G. E., York, Pa.
Hood, Wm. Henry, Reno, Nev.
House, William, Portland, Ore.
Jelliffe, Smith Ely, New York, N. Y.
Josephi, S. E., Portland, Ore.
Kilbourne, Arthur F., Rochester, Minn.
King, E. W., Ukiah, Cal.
MacCurdy, John, Youngstown, Ohio.
MacLean, J. D., Mead, Wash.
McBride, James H., Pasadena, Cal.
McGregor, Robert, Saginaw, Mich.
Mead, Sarah R., Newark, N. J.
Moore, Richard C., Omaha, Neb.
Oettinger, Bernard, Denver, Col.
Pershing, Howell T., Denver, Col.
Pressey, A. J., Cleveland, Ohio.
Price, A. D., Harrodsburg, Ky.
Punton, John, Kansas City, Mo.
Renz, Carl, San Francisco, Cal.
Robnett, J. H., Salem, Ore.
Robbins, Emma E., Hastings, Neb.
Rowe, Mark, Redmon, Ill.
Rutledge, Frances E., Newberry, Mich.
Schwab, Sidney I., St. Louis, Mo.
Selover, F. E., Eugene, Ore.
Smith, Robert Percy, Baltimore, Md.
Sneve, Haldor, St. Paul, Minn.
Spalding, S. K., Omaha, Neb.
Stewert, Walter S., Wilkesbarre, Pa.
Thoma, G. H., Reno, Nev.
Tomlinson, H. A., St. Peter, Minn.
Twohey, Jno. J., Buffalo N. Y.
Ward, W. H., Phoenix, Ariz.
Williamson, Walter T., Portland, Ore.
Wolfstein, D. I., Cincinnati, Ohio.
Yeaman, M. H., Lakeland, Ky.

Section on Cutaneous Medicine and Surgery.

Ankrim, Louie F., Pittsburg, Pa.
Baum, William L., Chicago, Ill.
Booth, Bradford Allen, Pittsburg, Pa.
Brayton, A. W., Indianapolis, Ind.
Calvin, Warren D., Ft. Wayne, Ind.
Connell, J. P., Fond du Lac, Wis.
Corlett, William Thomas, Cleveland, Ohio.
Dougherty, Clement F., Baker City, Ore.
Fewsmith, Joseph, Newark, N. J.
Field, Geo. J., Eureka, Utah.
Fisk, F. F., Price, Utah.
Foxworthy, O. W., Leon, Iowa.
Grosse, Alfred B., San Francisco, Cal.
Hawkins, Thos. H., Denver, Col.
Hendon, G. A., Louisville, Ky.
Hamlin, Oliver D., Oakland, Cal.
Howell, John T., Wilkesbarre, Pa.
Ingram, Jesse W., Walla Walla, Wash.
Jelks, James T., Hot Springs, Ark.
King, J. C. Elliott, Portland, Ore.
Powers, Haymond J., Ogden City, Utah.
Pusey, W. A., Chicago, Ill.
Ravogli, Augustus, Cincinnati, Ohio.
Reinle, Geo. G., Oakland, Cal.
Rosenberg, F. J., Lexington, Neb.
Sala, E. M., Rock Island, Ill.
Short, J. M., Gresham, Ore.
Smith, Jacob S., Bellingham, Wash.
Swoboda, Louis, Omaha, Neb.
Thomas, James W., Seattle, Wash.
Tilzer, A., Portland, Ore.
Williams, Ralph, Los Angeles, Cal.

Section on Laryngology and Otology.

Anderson, Willis S., Detroit, Mich.
Barnhill, John F., Indianapolis, Ind.
Bartle, P. J., Eugene, Ore.
Brosius, F. C., Hood River, Ore.
Bryant, W. Sohier, New York, N. Y.
Bruere, Gustave E., Portland, Ore.
Cline, L. C., Indianapolis, Ind.
Coghlan, Dr. John N., Portland, Ore.
Cooper, C. E., Denver, Col.
Cott, Geo. F., Buffalo, N. Y.
Cox, Rosamond L., San Francisco, Cal.
Dally, F. M., Beloit, Kan.
De Vilbiss, Allen, Toledo, Ohio.
Fenton, H. C., Portland, Ore.
Foster, Hal, Kansas City, Mo.
Freer, Otto T., Chicago, Ill.
Gaines, J. W., Kansas City, Mo.
Gilden, P. F., Colorado Springs, Col.
Hall, D. Walton, Kansas City, Mo.
Hastings, Hill, Los Angeles, Cal.
Hawley, Alanson W., Seattle, Wash.
Kirk, W. H., Pittsburg, Pa.
Kirkendall, John S., Ithaca, N. Y.
Leland, G. A., Boston, Mass.
Malsbary, Geo. E., Cincinnati, Ohio.
Martindale, John H., Los Angeles, Cal.
Myles, Robert E., New York, N. Y.
Osgood, C. F., Ogden, Utah.
Pennell, William W., Mt. Vernon, Ohio.
Powers, L. M., Los Angeles, Cal.
Richards, Geo. L., Fall River, Mass.
Rogers, Arthur S., Saginaw, Mich.
Solenberger, Amos R., Colorado Springs, Col.
Welty, Cullin F., San Francisco, Cal.

Section on Pharmacology and Therapeutics.

Beard, T. E., Grant's Pass, Ore.
Bowen, Frederick, Jacksonville, Fla.
Chamberlin, C. S., Cincinnati, Ohio.
Clark, G. H., Waterloo, Iowa.
Coad, N. G. O., Hull, Iowa.
Cottel, Willis I., Portland, Ore.
Dickerson, W. L., St. Louis, Mo.
Fassett, Chas. Wood, St. Joseph, Mo.
Foss, John W., Phoenix, Ariz.
Frick, Wm., Kansas City, Mo.
Hallberg, C. S. N., Chicago, Ill.
Harris, E. Eliot, New York, N. Y.
Jones, Philip Mills, San Francisco, Cal.
Kelly, J. V., Philadelphia, Pa.
Leonard, Edwin, Jr., Jersey City, N. J.
Lewis, H. Edwin, Burlington, Vt.
McNair, William Righter, Glendora, Cal.
Reilly, Thos. F., New York City, N. Y.
Riley, Cassius M., St. Louis, Mo.
Ristine, W. H., Crawfordsville, Ind.
Simmons, George H., Chicago, Ill.
Stern, Heinrich, New York, N. Y.
Walker, A. D., Portland, Ore.
Waugh, Wm. F., Chicago, Ill.
Wheatley, Frank G., North Abington, Mass.
Wilson, L. D., Wheeling, W. Va.

Section on Pathology and Physiology.

Black, Stanley P., Pasadena, Cal.
Brooks, Harriet V. Bills, Saginaw, Mich.
Brubaker, Albert P., Philadelphia, Pa.
Christian, Henry A., Boston, Mass.
Hall, Winfield S., Chicago, Ill.
Kemp, Geo. T., Champaign, Ill.
King, Chas. Lee, Pasadena, Cal.
Knabe, Helene, Indianapolis, Ind.
Krone, Carl R., Oakland, Cal.
McClintock, Chas. T., Detroit, Mich.
McFarland, Joseph, Philadelphia, Pa.
New, Charles F., Indianapolis, Ind.
Nusbaumer, Pauline S., Oakland, Cal.
Raley, Franklin H., Salt Lake City, Utah.
Rosenau, M. J., Washington, D. C.
Ruediger, Gustav F., Chicago, Ill.
Smith, Claude A., Atlanta, Ga.
Wynn, Frank B., Indianapolis, Ind.

The following did not specify any particular Section:

Ainslie, George, Portland, Ore.
Aschenbrenner, C. F. Dysart, Iowa.
Axtell, W. H., Bellingham, Wash.
Avey, O. H., Payette, Idaho.
Barnes, E. W., North Powder, Ore.
Botkin, A. W., Mt. Tabor Sta., Portland, Or.
Bowles, Marion K., Joliet, Ill.
Boyd, J. C., Washington, D. C.
Boyers, J. S., Decatur, Ind.
Brundage, M., Shelley, Idaho.
Carson, N. B., St. Louis, Mo.
Carll, Walter E., Oregon City, Ore.
Cargill, Chauncey W., Mason City, Ill.
Carter, R. H., Victoria B. C.*
Collins, I. S., Burke, Idaho.
Cook, John Wallace, Pendleton, Ind.
Douglas, William, Tacoma, Wash.
Downing, W. L., Moulton, Iowa.
Drew, Geo. E., New Westminster, B. C.*
Edwards, Wm., Bowdle, S. D.
Eldridge, E. F., Grand Junction, Colo.
Equi, Marie D., Portland, Ore.
Ferguson, James B., Olivia, Minn.
Ferguson, E. E., The Dalles, Ore.
Giesy, A. J., Portland, Ore.
Hanson, D. S., Cleveland, Ohio.
Hatchett, John A., El Reno, Okla.
Hines, Chas., Forest Grove, Ore.
Hosmer, A. J., Salt Lake City, Utah.
Hughes, H. A., Phoenix, Ariz.
Jayne, R. A., Springfield, Ore.
Jefferson, G. Orlo, Portland, Ore.
Johnson, J. J., Harrison, Ark.
Keith, L. S., Towanda, Ill.
Kirkpatrick, Wm. D., Bellingham, Wash.
Lane, Harry, Portland, Ore.
Lehnkering, C. F., Darlington, Wis.
Lobdell, Mary J., Beloit, Kan.
Long, John W., Bryan, Ohio.
Manning, John F., Everett, Wash.
Martin, Harry S., Spokane, Wash.
Marsh, R. J.; Portland, Ore.
Matthews, A. Aldridge, Spokane, Wash.
Moody, Chas S., Sand Point, Idaho.
Murray, A. J., Lakeside P. O., Ontario.*
Newcomer, M. V. B., Tipton, Ind.
O'Reilly, Robert W., Washington, D. C.
Parkinson, James H., Sacramento, Cal.
Peavler, G. M., Bristol, Tenn.
Pickel, E. B., Medford, Ore.
Prinzing, Jacob, Ontario, Ore.
Purdue, G. C., Wichita, Kan.
Rankin, Theo. W., Columbus, Ohio.
Saunders, Clark E., Union, Ore.
Seidler, W. J., Newark, N. J.
Skene, William H., Portland, Ore.
Smouse, David W., Des Moines, Iowa.
Spottswood, E. W., Missoula, Mont.
Stevens, J. E., Seattle, Wash.
Stickney, V. H., Dickinson, N. D.
Strickland, Melville Cox, Oregon City, Ore.
Stribling, J. S., Seneca, S. S.
Tanquary, J. H., St. Louis, Mo.
Thornton, Edgar H., Portland, Ore.
Thorpe, J. L., Jefferson City, Mo.

Turner, W. K., Seattle, Wash.
Turner, S. T., El Paso, Texas.
Tuthill, J. A., Le Roy, Ill.
Vaughn, J. B., Castlewood, S. D.
Watkins, T. R., Aberdeen, Wash.
Watson, W. C., Lima, Ohio.
Watson, Wm. Newbold, Philadelphia, Pa.
Welch, John Frederick, Quincy, Mass.
Wheeler, C. H., Portland, Ore.
Wiltsie, S. F., Seattle, Wash.
Willson, G. C., Nevada, Mo.
Witherbee, O. O., Los Angeles, Cal.
Wood, C. B., Honolulu, Hawaii.
Wood, J. F., Condon, Ore.
Yerdon, Charles F., Brooklyn, N. Y.
Young, James A., Pearl, Idaho.

NEW MEMBERS.

List of new members of the American Medical Association during the month of July, 1905:

ALABAMA.

Dugan, R. H., Prairie Villa.
Fields, E. T., Ensley.

ARIZONA.

Cassady, D., Bisbee.
Hughes, H. A., Phoenix.
Olcott, A. W., Tucson.

ARKANSAS.

Eastman, E. H., Hot Springs.
Hederick, A. R., Booneville.
Parker, J. L., Snyder.
Sweatland, A. E., Little Rock.
Steed, C. J., Hurricane.

CALIFORNIA.

Avey, J. L., Redlands.
Bryant, E. A., Los Angeles.
Barber, D. C., Los Angeles.
Black, J. A., San Francisco.
Brown, Geo. J., Smith River.
Breneman, J. T., Martinez.
Carlton, H. P., San Francisco.
Clark, Wm. A., San Leandro.
Cunnani, T. E., Ventura.
Crediford, D. B., Rialto.
Campbell, C. G., San Bernardino.
Cox, H. M., San Luis Obispo.
Dial, E. A., Santa Barbara.
Davis, S. F., Pomona.
Hesser, G. T., Folsom City.
Herbert. H., Los Angeles.
Hinkle, B. M., San Francisco.
King, E. D., Ukiah.
Kane, J. M., Oakland.
Kelly, A. S. Oakland.
Majors, E. A., Stoledad.
Milton, J. L., Oakland.
Magee, C. L., Los Angeles.
Meng, J. D., Chico.
Mules, J. H., East Auburn.
Nelson, L., San Francisco.
Nixon, A. W., Los Angeles.
Pond, G. P., San Francisco.
Reed, C. E., Redding.
Ryfkogel, H. A. L., San Francisco.
Richardson, N. E., Salinas.
Schmall, E., San Francisco.
Smyth, M. H., Stockton.
Southworth, M. A., San Jose.
Schlageter, H. J., San Francisco.
Troppmann, C. M., San Francisco.
Walker, J. R., Fresno.

COLORADO.

Bren. M. R., Denver.
Daniels, H. P., Colorado City
Epler, Crum, Pueblo.
Hutchinson, W., Del Agua.
Keeney, M. J., Pueblo.
Phelan, N. J., Denver.
Stubbs, A. L., La Junta.
Shere, O. M., Denver.
Wood, W. H., Greeley.
Wilkinson, W. W., Silverton.

CONNECTICUT.

Heady, E. B., Milford.
Lewis, J. B., Hartford.
Loomis, F. N., Derby.
McCabe, E. M., New Haven.
Smirnow, Louis, Bridgeport.
Streit, George, Middletown.
Witter, Wm., Norwich.
Young, C. B., Middletown.

DISTRICT OF COLUMBIA.

Biscoe, F. L., Washington.
Duffey, H. C., Washington.
Key, Sothoron, Washington.

GEORGIA.

Champion, W. L., Atlanta.

HAWAII.

Day, F. R., Honolulu.
Armitage, Edw., Wailuku, Mani.

IDAHO.

Boyd, T. O., Twin Falls.
Collister, Geo., Boise.
Coultchard, G. H., Idaho Falls.
Clouchek, H. W., Twin Falls.
Gritman, C. L., Moscow.
Hamilton, J. J., Caldwell.
Hall, O. L., Star.
Jordan, M. S., Grand Mound.
Moody, C. S., Sand Point.
Murray, J. H. Nampa.
Phillips, C. C., Lewiston.
Springer, W. D., Boise.

ILLINOIS.

Bailey, C. W., Hebron.
Bailey, G. T., Chicago.
Baldwin, B. H., Chicago.
Burch, G. W., Quincy.
Bussey, G. N., Chicago.
Bell, A., Chicago.
Clune, P. J., Ottawa.
Coone, B., Chicago.
Crowder, T. R., Chicago.
Crouch E. L., Jacksonville.
Conner, E. M., Chicago.
Dagg, T. L., Chicago.
Dicus, G. A., Streator.
Duncan, C. E., Flora.
Foster, T. J., De Soto.
Fiske, D., Chicago.
Gaebler, Arthur, Chicago.
Githens, W. K., Hamilton.
Greig, T. O., Chicago.
Hester, E. E., Paxton.
Hansen, G. H., Chicago.
Harper, J. E., Chicago.
Huey, W. B., Chicago.
Hamilton, J. W., Mt. Vernon.
Hassin, G. B., Chicago.
Frank, I., Chicago.
Kieene. F. R. C., Chicago.
Lemen, H. R., Alton.
Leonard, E. F., Chicago.
Lurie, W. A., Chicago.
Lyon, C. E., Toledo.
MacDowell, E. G., Chicago.
McCornack, E. A., Elgin.
Merkl, E. J., Chicago.
Miller, G. P., Chicago.
Miller, J. E., Pittsfield.
McGuire, J. W., Chicago.
Peter, R., Chicago.
Presler. H. M., Cullom.
Presnell, J. F., Chicago.
Phillips, D. C., Chicago.
Podstata, V. H., Dunning.
Rosenow, E. C., Chicago.
Reid, D. W., Jacksonville.
Rochow, C. J. F., Rock Island.
Remmen, N. E., Chicago.
Rudy, F. T., Champaign.
Vary, W. H., Chicago.
Vaupell, W. R., Chicago.
Washburn, W. E., Kewanee.
Whise, M., Chicago.

INDIANA.

Brill, J. H., Indianapolis.
Black, F. W., Ligonier.
Calvin, J. Carruthers, Ft. Wayne.
Cooper, J. A., Terre Haute.
Daugherty, C. A., South Bend.
Freeland, J. L., Indianapolis.
Hawn, C. E., Little York.
Mattison, J. A., Nat. Mil. Home.
McFarlin, J. T., Williams.
Miller, H. H., Galveston.
Niblack, E. S., Terre Haute.
Ritter, M. T., Angola.
Whitesides, L. L., Franklin.
Westover, R. L., Indianapolis.

IND. TERRITORY.

Looney, R. E., Lindsay.

IOWA.

Burgess, J. A. W., Iowa Falls.
Brubaker, J. F., Hubbard.
Bridgman, J. C., Radcliffe.
Breniman, E. M., Ackley.
Butler, F. P., Whitten.
Bartran, R. T., Albia.
Corbit, A. B., Wyoming.
Caldwell, J. W., Steamboat Rock.
Caldwell, J. Willard, Steamboat Rock.
Conner, F. H., Nevada.
Cronk, C. H., Bloomfield.
Dittmer, H. A., Manchester.
Evans, F. J., Iowa Falls.
Hobson, A. J., Hampton.
Hunter, W. W., Monticello.
Hartman, F. T., Waterloo.
Jones, E. H., Eldora.
Koeneman, E. O., Eldora.
Lowder, Wm., New Providence.
McLaughlin, C. W., Washington.
Miller, J. J., Ackley.
Moore, M. F., Martinsburg.
Mabee, C. O., New Providence.
Marsh, W. E., Eldora.
Morton, L. B., Iowa Falls.
Murphy, F. J., Sioux City.
Pagelson, O. H., Iowa Falls.
Petrovitsky, J. S., Cedar Rapids.
Rabe, F. L., Hubbard.
Roberts, W. P., Cleghorn.
Scarborough, H. V., Grand Junction.
Sanders, W. E., Alta.
Stone, Guy, Keswick.
Sherman, A. M., Grinnell.
Trimble, C. S., Buckeye.
Underwood, R. B., Eldora.
Vroom, C. W., Ackley.
Wood, P. R., Marshalltown.
Walker, J. R., Ft. Madison.
Whitney, W. E., Eldora.
Willett, C. C., Whitten.
Wray, C. M., Lawton.
White, E. E., Huxley.

KANSAS.

Boss, J. H., Weir City.
Buley, D. G., Valley Center.
Blades, S. T., Scottsville.
Chadwick, I. B., Tyro.
Fabrigur, A. H., Wichita.
Holt, T. T., Geudo Springs.
Hartwell, G. N., Jamestown.
Hardesty, H. O.,Jennings.
Humfreville, D. W., Waterville.
McManis, J. E., Havensville.
Nichols, S., Herington.
Nye, W. W., Hiawatha.
Shelton, F. W., Independence.
Snyder, H. G., Seneca.
Spitler, S. W., Wellington.
Shannon, L. W., Hiawatha.
Ullman, J. F., Simpson.
Wilson, W. P., Westmoreland.

KENTUCKY.

Hendon, G. A., Louisville.
Lex, E. A., Louisville.
Mosely, J. C., Henderson.
Price, A. D., Harrodsburg.

LOUISIANA.

Burley, C. H., Monterey.
Feucht, E. P., Laplace.

MAINE.

Merrill, H. P., Portland.
Price, W. N., Richmond.
Washburn, G. E., Augusta.
Walton, R. D., Frankfort.

MARYLAND.

Davidson, C. F., Easton.
Goodman, J. M., Frederick.
Hall, R. M., Baltimore.
Harrison, H. T., Loch Raven.
Kahn, H., Baltimore.
Legge, J. E., Oakland.
McNeer, R. L., Baltimore.
Magruder, W. E., Cany Spring.
Spear, I. J., Baltimore.
Seymour, W. S., Trappe.
Wilcox, F. W., Baltimore.

MASSACHUSETTS.

Bacon, T. S., Cambridge.
Chase, E. L., Shrewsbury.
Cunningham, J. H., Jr., Boston.
Dwight. Thos., Nahant, Mass.
Glendenning, R. T., Manchester.
Hunt, W. O., Newtonville.
Haines, I., Cambridge.
Hubbard, J. C., Boston.
Jackson, H. B., Melrose.
Murdock, F. W., Brockton.
McPherson, G. E., S. Boston.
Morse, F. L., Somerville.
Murphy, E. M., Lowell.
Newhall, H. W., Lynn.
Nichols, J. H., Tewksbury.
Osborne, C. A., Worcester.
Porter, R. B., North Easton.
Richardson, F. L., Concord.
Tyrode, M. V., Boston.
Trainor, J. B., Fall River.
Wadsworth, O. F., Boston.
Whiton, R. K., Quincy.

MICHIGAN.

Baird, R. H., Howell.
Brook, J. D., Grandville.
Bryant, S. E., Dowagiac.
Elmer, W. P., Ann Arbor.
Hart, A. O., Maple Rapids.
Hewitt, H. W., Detroit.
Johnson, B. F. P., Rosebush.
McCarroll, Wm., Pontiac.
McKnight, E. E., Alpena.
Matchette, W. H., Hancock.
McBean, Jas. C., Applegate.
Shattuck, G. S., Detroit.
Sigel, T., Detroit.
Wessinger, J. A., Ann Arbor.

MINNESOTA.

Barsness, N. O. N., St. Paul.
Cowles, D. C., Minneapolis.
Dart, L. O., Minneapolis.
Hougan, O. M., Fergus Falls.
Pare, L. T., Duluth.
Rutledge, J. W., Minneapolis.
Salter, W. H., Duluth.
Stuart, J. H., Minneapolis.
Sawyer, H. P., Goodhue.
Theissen, W. N., Henderson.
Whitacre, J. C., St. Paul.

MISSISSIPPI.

Rauch, E. S., Vicksburg.
Simmons, C. L., McBride.

MISSOURI.

Austin, M. B., Brunswick.
Clagett, O. F., Jamesport.
Crawford, H. S., Harrisonville.
Davenport, R. G., Trenton.
Fleming, A. W., St. Louis.
Guibor, H. F., St. Louis.
Gashwiler, —, Novinger.
Hall, D. W., Kansas City.
Matlock, C. E., St. Louis.
Moore, E., St. Louis.
Miller, H., Kansas City.
Schulte, F. A., St. Louis.
Smith, B. T., Newburg.
Trimble, W. K., Kansas City.

MONTANA.

Lilly, A. H., Butte.
Moore, T. B., Butte.
Pampol, B. L., Livingston.
Pigot, C. T., Butte.

NEBRASKA.

Guttery, J. D., Valparaiso.
Isaacs, D., Winside.
Kraft, F. E., So. Auburn.
Quigley, D. T., No. Platte.
Robbins, E. E., Hastings.
Smrha, V. V., Milligan.

NEW HAMPSHIRE.

Locke, E. M., Nashau.
Palmer, H., Plymouth.

NEW JERSEY.

Baker, R. D., Summit.
Drummond, E. A., Newark.
Hoagland, G. G., Keyport.
Leonard, E., Jersey City.
Martland, W. H., Newark.

NEW MEXICO.

Smith, H. M., Las Vegas.
Thomson, R. J., Santa Rosa.
Yoakam, F. A., Cerrillos.

NEW YORK.

Benedict, A. J., Newburgh.
Berlin, F. F. R., New York.
Cooke, W. S., New York.
Conklin, R. C., Batavia.
Comfort, C. G. V., Rochester.
Dort, E., Buffalo.
Duggan, John, Albion.
Eytinge, O. J., Brooklyn.
Fuller, N. H., Friendship.
Friedman, L. A., New York.
Gross, M., New York.
Grady, J. J., New York.
Glenny, W. H., Buffalo.
Griggs, E. C., Ithaca.
Herst, S., New York.
Hopkins, F. T., New York.
Holland, A. L., New York.
Jackson, C. R. ,New York.
Latham, O. N., Bolivar.
Leibermann, J. M., New York.
Lewson, M., New York.
Lo Pinto, J., New York.
Lytle, C. G., Geneva.
McBurney, Charles, New York.
Meisburger, W., Buffalo.
Mooney, L. M., New York.
MacCoy, C., Brooklyn.
McParlan, J. P., New York.
Neal, V. F., Ellenville.
Nicolai, C., New York.
Preisch, E. L., Lockport.
Page, C. C., New York.
Pattison, W. E., Westport.
Potter, I. W., Buffalo.
Remington, A. C., Rochester.
Rushmore, E. C., Tuxedo Park.
Stewart, E. W., Hume.
Sayres, C. O., Belfast.
Stein, S. A., New York.
Woodroff, C. E., Plattsburg.
Winter, H. L., Cornwall.
Wheeler, D. E., Buffalo.

NORTH CAROLINA.

Austin, J. A., Charlotte.
Busby, J. G., Spencer.
Anders, McG., Connelly Springs.
Davis, R. L., Bryson City.
Harrill, L. B., Caroleen.

Joyner, R. W., Woodland.
Patrick, G. R., Lowell.
Reitzel, J. R., High Point.

NORTH DAKOTA.

Bates, W. H., Grand Forkes.
Burton, P. H., Fargo.
Claybaugh, W. R., Litchfield.
O'Brien, T., Wahpeton.

OHIO .

Bennett, J. H., Youngstown.
Blott, H. E., Youngstown.
Browning, C. H., Oberlin.
Brainerd, H. C., Cleveland.
Coe, E. W., Youngstown.
Christopher, W. H., London.
Crawford, G. M., Lorain.
Costello, T. A., Cleveland.
Dye, J. H., Cleveland.
Easton, J. C., Springfield.
Feiss, H. O., Cleveland.
Freeman, C. D., Medina.
Hawes, S. A., Greenville.
Hutchins, F. C., Cleveland.
Ingraham, F., Curtice.
Jacobs, H. H., Akron.
Kahn, M., Cleveland.
McPeck, E. E., Cleveland.
Pearson, G. L., Youngstown.
Parrish, R. C., Youngstown.
Ruel, J. J., Cleveland.
Runyan, M. T., Oberlin.
Snyder, F. D., Ashtabula.
Stone, W. J., Toledo.
Sharkey, B., Middletown.
Whitslar, W. H., Cleveland.
Williams, C. D., Cleveland.
Yocum, L. A., Wooster.
Yates, E. A., Kirkwood.

OKLAHOMA.

Beall, C. G., Oklahoma City.
Hahn, L. A., Guthrie.
Mitchell, E. B., Anadarko.
Steagall, T. R., Blackwell.

OREGON.

Belt, W. C., Portland.
Booth, W. H., Lebanon.
Bailey, A. B., Hillsboro.
Bailey, F. J., Hillsboro.
Boyd, W. H., Portland.
Braden, W. B., Portland.
Bristow, J. H., Portland.
Cathey, B. A., Corvallis.
Chilton, L. W., Canyon City.
Carrico, J. H., Woodburn.
De Vaul, O., Portland.
Douglas, G. H., Grant's Pass.
De Armond, R. S., Grant's Pass.
Ellis, M. H., Albany.
Farra, G. R., Corvallis.
Gullette, Fred, Portland.
Harris, J. W., Eugene.
Holcomb, C., Portland.
Hall, J. E., Clatskanie.
Hawke, C. E., Portland.
Harris, T. W., Eugene.
Hockett, C. T., Cottage Grove.
Hawk, W. C., Jefferson.
Jayne, R. A., Springfield.
Johnson, E. D., Portland.
Kime, A. W., Cottage Grove.
Kistner, F. B., Heppner.
Lane, H., Portland.
Lee, C. H., Corvallis.
Lewis, W. E., Seaside.
Lowe, J. M., The Dalles.
Mattson, R. C., Portland.
Marsh, R. J., Portland.
Prill, A. G., Scio.
Pernot, H. S., Corvallis.
Pogue, G. A., Ontario.
Pearce, C. M., Sumpter.
Pierce, E. A., Salem.
Ringo, R. E., Pendleton.
Robinson, F. M., Beaverton.
Rosenberg, J. H., Primeville.
Stott, J. S., Portland.
Scarbrough, L. D., Creswell.
Sternberg, J. D., Portland.
Silover, F. E., Eugene.
Smith, F. E., Salem.
Shaw, H. M., Ashland.
Trimble, W. A., Albany.
Timms, E. D., Portland.
Wood, W. D., Hillsboro.
Wade, C. E., Drain.
Watt, J. F., Hood River.
Wells, G. M., Portland.

PENNSYLVANIA.

Allen, C. W., Ambridge.
Bland, P. B., Philadelphia.
Baker, F. N., Media.
Brubaker, A. P., Philadelphia.
Crow, A. E., Uniontown.
Campbell, O. C., Philadelphia.
Frantz, G. B., Coal Center.
Gilliland, S. H., Philadelphia.
Horning, S. B., Lower Providence.
Hersman, C. C., Pittsburg.
Kachline, J. C., So. Bethlehem.
Linn, C. F., Monongahela.
Mitchell, C. F., Philadelphia.
McGrath, J. F., Pittsburg.
Maxwell, J. R., Parkersburg.
Remington A H., Philadelphia.
Rugh, W. J., Pittsburg.
Stayer, A. S., Altoona.
Sommer, H. J., Jr., Norristown.
Stranahan, G. W., Erie.
Taylor, F. H., Uniontown.
Voigt, C. H., Allegheny.
Weber, C. Z., Norristown.
Wormser, B. B., Scranton.
Zern, J. G., Lehighton.

RHODE ISLAND.

Brown, F. N., Providence.
Graham, S. P., Providence.
Kirby, W. W., Providence.
O'Neil, J. E., Providence.

SOUTH CAROLINA.

Buist, A. J., Charleston.
Giles, C. T. J., Greenville.
Johnston, J. G., Chester.
Wilson, J. R., Charleston.
Wylie, A. M., Chester.

SOUTH DAKOTA.

Carson, S. L., Lower Brule.
Frink, O. G., So. Shore.
Keller, W. F., Sioux Falls.
Townsend, L. J., Belle Fourche.

TENNESSEE.

Lewis, A. W., McCays, Tenn.
McRady, F. S., Petersburg.
Turner, A. E., Neboville.

TEXAS.

Adams, W. J., Robert Lee.
Huffaker, D. H., El Paso.
De Steigner, J. R., San Marcus.
Lester, H. B., Corsicana.
Lay, J. E., Jr., Sweet Home.
Latham, W. W., Porter Springs.
Simmons, C. B., Decatur.
White, A. H., El Paso.

UTAH.

Field, G. J., Eureka.
Stewart, M. R., Salt Lake City.
Stookey, W. M., Lehi, Utah.
Pinkerton, S. H., Salt Lake City.
Wade, W. A., Payson.

VERMONT.

Hunter, J. W., Jr., Norfolk.
Perkins, H. B., Croton.

VIRGINIA.

Clark, J. P., Lynchburg.
Tulloss, W. R., Haymarket.
Wiseman, H. A., Jr., Danville.

WASHINGTON.

Allen, H. E., Seattle.
Adair, B. A. O., No. Yakima.
Baker, B. L., Everett.
Cardwell, W. C., Pomeroy.
Coberly, L. J., Garfield.
Douglas, Wm., Tacoma.
De Beck, D., Seattle.
Engels, C. F., Ballard.
Ferguson, T. D., Colfax.
Fitch, H. J., Ellensburg.
Greene, H. M., La Crosse.
Gaines, W. S., Oakesdale.
Gibson, W. E., Issaquah.
Hood, C. S., Ferndale.
Ingram, J. W., Walla Walla.
Johnson, S. H., Bellingham.
Kinnear, C. H., Tacoma.
Keith, R. L., Seattle.
Kennecott, G. W., Chehalis.
Lyons, J. H., Seattle.
Luce, F. H., Davenport.
Morrison, W. F., Spokane.
Matthews, A. A., Spokane.
Maguire, Edw.,Pullman.
Rose, F., Spokane.
Robins, M. C., Spokane.
Stevens, E. W., Dryad.
Shannon, W. A., Seattle.
Stafford, E. A., Snohomish.
Sellors, Wm., Spokane.
Stuht, A. E., Colfax.
Swearingen, P. B., Tacoma.
Smith, J. S., Bellingham.
Sargentich, S., Tacoma.
Woodin, S. P., Georgetown.
Wotherspoon, John, Seattle.
Warmburg, G. F., Seattle.
Wing, P. R., Tacoma.
West, W. F., Everett.

WEST VIRGINIA.

Henry, C. O., Fairmont.
Martin, E. T., Keyser.
Riedy, J. A., Monongah.
Slusher, W. C., Burnwell.
Walkinshaw, J. B., Wellsburg.

WISCONSIN.

Ashum, D. W., Eau Claire.
Bock, O. B., Sheboygan.
Bartran, W. H., Green Bay.
Christensen, J. W., Kendall.
Cleary, J. L., Kenosha.
Dahl, L. A., Stanley.
Elliott, S. T., Richland Center.
Fulton, W. A., Burlington.
Finstad, G. J., Menomonee.
Gibbs, G. L., Marshall.
Kitzki, W., Manawa.
Kelly, D. M., Baraboo.
Muth, Carl, Sheboygan.
Milbee, H. H., Marshfield.
Maurer, A. A., La Crosse.
Moody, L., Superior.
McDonald, H. F., Hollandale.
Neilson, W. H., Milwaukee.
Orchard, H. J., Superior.
Peterson, G. E., Waukesha.
Ridgman, A. L., Grand Rapids.
Senn, F. C., Oshkosh.
Scheib, G. F., Fond du Lac.
Trevitt, A. W., Wausau.
Teich, Wm., Milwaukee.
Zillisch, W. E., Hortonville.

WYOMING.

Bradfield, J. H., Sheridan.

State Boards of Registration

COMING EXAMINATIONS.

State Board of M [illegible] California, San Francisco, August 15. Secreta [illegible] San Francisco.

Wyoming State [illegible] aminers, State Capitol, Cheyenne, Wyo., Sep [illegible] S. B. Miller, Laramie.

Massachusetts Bo [illegible] Medicine, State House, Boston, September 1 [illegible] Harvey, Boston.

Arkansas July Report.—Dr. J. P. Runyan, secretary of the State Medical Examining Board of the Arkansas Medical Society, reports the examination held at Little Rock, July 11, 1905. The number of subjects examined in was 7; total number of questions asked, 50; percentage required to pass, 75. The total number of candidates examined was 28, of whom 19 were undergraduates; 18 passed, and 10 failed. The following colleges were represented:

PASSED.

College.	Year Grad.	Per Cent.
College of P. and S., Chicago (undergraduate)		85
Fisk University	(1900)	85
Flint Med. Coll. (undergraduates) 82, 76;	(1905)	80
Memphis Hosp. Med. Co [illegible]		76
Barnes Med. Coll. ...([illegible]		81
Washington University [illegible]	(1903)	84
Tulane and Vand [illegible]		92
Tulane Universit [illegible] ;	(1905)	94
Shaw University		81
Milwaukee Med. Coll.		94
University of Nashville (undergraduate)		83
University of Missouri (undergraduate)		75
Medico-Chirurgical, Kansas City	(1905)	78

FAILED.

College.	Year Grad.	Per Cent.
Galveston and Memphis Hosp. Med. Coll. (undergraduate)		43
University of Missouri (undergraduate)		53
University of Nashville and Baylor Med. Coll. (undergraduate)		69
Universities of Arkansas and Nashville (undergraduate)		58
Flint Med. Coll.	(1905)	59
Tulane University (undergraduate)		66
Louisville Med. Coll. and Tulane Univ. (undergraduate)		63
Knoxville Med. Coll.	(1903)	69
Memphis Hosp. Med. Coll. (undergraduate)		58
Memphis Hosp. Med. Coll. and Barnes Med. Coll. (undergraduate)		67

South Carolina June Report.—Dr. W. M. Lester, secretary of the South Carolina State Board of Medical Examiners, reports the written examination held at Columbia, June 13-15, 1905. The number of subjects examined in was 18; total number of questions asked, 95; percentage required to pass, 75, and not less than 60 on any subject. The total number of applicants examined was 66, of whom 44 passed and 22 failed. The following colleges were represented:

PASSED.

College.	Year Grad.	Per Cent.
Medical Coll. of the State of South Carolina,	(1900) 89.6; (1905)	77.2, 80.1, 81.2, 81.8, 82.1 82.6, 82.8, 83.2, 83.6, 83.8, 85, 85.3, 85.3, 86.3, 87.1, 88.1, 88.5, 93.2.
University of Pennsylvania	(1901) 89.1; (1903)	89.6
Howard University	(1904)	81.7
University of Kentucky	(1904)	79.2
North Carolina Med. Coll.	(1902) 76; (1905)	80.1
College of P. & S., Chicago	(1905)	86.1
University of Nashville	(1905)	75.5, 82.3, 87, 92.7
Leonard Med. Coll.	(1902)	75
University of Maryland	(1904)	80.5, 81, 82, 78.6, 75, 83.7
Jefferson Med. Coll.	(1905)	78, 83.3
Tulane University	(1905)	79.7, 81
College of P. & S., Atlanta	(1900)	81.1
Baltimore Med. Coll.	(1905)	84
College of P. and S. Baltimore	(1904)	75

FAILED.

College.	Year Grad.	Per Cent.
Medical Coll. of the State of South Carolina,	(1901) 60.2; (1905)	79.3,* 70.2, 78.6,* 76.8.* 78.8,* 79.8.*
North Carolina Med. Coll.	(1903)	80.6*
University of the South	(1904)	74.1**
University of Kentucky	(1904)	79*
Leonard Med. Coll.	(1889) 66.5; (1905)	75*
Chattanooga Med. Coll.	(1905)	55.3, 59.3
University of Tennessee	(1905)	52.2
Meharry Med. Coll.	(1905)	75*
Maryland Med. Coll.	(1904) 56.6; (1905)	39.3
University of Maryland	(1905)	79.3*

Turner, W. K., Seattle, Wash.
Turner, S. T., El Paso, Texas.
Tuthill, J. A., Le Roy, Ill.
Vaughn, J. B., Castlewood, S. D.
Watkins, T. R., Aberdeen, Wash.
Watson, W. C., Lima, Ohio.
Watson, Wm. Newbold, Philadelphia, Pa.
Welch, John Frederick, Quincy, Mass.
Wheeler, C. H., Portland, Ore.
Wiltsie, S. F., Seattle, Wash.
Willson, G. C., Nevada, Mo.
Witherbee, O. O., Los Angeles, Cal.
Wood, C. B., Honolulu, Hawaii.
Wood, J. F., Condon, Ore.
Yerdon, Charles F., Brooklyn, N. Y.
Young, James A., Pearl, Idaho.

NEW MEMBERS.

List of new members of the American Medical Association during the month of July, 1905:

ALABAMA.

Dugan, R. H., Prairie Villa.
Fields, E. T., Ensley.

ARIZONA.

Cassady, D., Bisbee.
Hughes, H. A., Phoenix.
Olcott, A. W., Tucson.

ARKANSAS.

Eastman, E. H., Hot Springs.
Hederick, A. R., Booneville.
Parker, J. L., Snyder.
Sweatland, A. E., Little Rock.
Steed, C. J., Hurricane.

CALIFORNIA.

Avey, J. L., Redlands.
Bryant, E. A., Los Angeles.
Barber, D. C., Los Angeles.
Black, J. A., San Francisco.
Brown, Geo. J., Smith River.
Breneman, J. T., Martinez.
Carlton, H. P., San Francisco.
Clark, Wm. A., San Leandro.
Cunnani, T. E., Ventura.
Crediford, D. B., Rialto.
Campbell, C. G., San Bernardino.
Cox, H. M., San Luis Obispo.
Dial, E. A., Santa Barbara.
Davis, S. F., Pomona.
Hesser, G. T., Folsom City.
Herbert. H., Los Angeles.
Hinkle. B. M., San Francisco.
King, E. D., Ukiah.
Kane, J. M., Oakland.
Kelly, A. S. Oakland.
Majors, E. A., Stoledad.
Milton, J. L., Oakland.
Magee, C. L., Los Angeles.
Meng, J. D., Chico.
Mules, J. H., East Auburn.
Nelson, L., San Francisco.
Nixon, A. W., Los Angeles.
Pond, G. P., San Francisco.
Reed, C. E., Redding.
Ryfkogel, H. A. L., San Francisco.
Richardson, N. E., Salinas.
Schmall, E., San Francisco.
Smyth, M. H., Stockton.
Southworth, M. A., San Jose.
Schlageter, H. J., San Francisco.
Troppmann, C. M., San Francisco.
Walker, J. R., Fresno.

COLORADO.

Bren. M. R., Denver.
Daniels, H. P., Colorado City
Epler. Crum, Pueblo.
Hutchinson, W., Del Agua.
Keeney, M. J., Pueblo.
Phelan, N. J., Denver.
Stubbs, A. L., La Junta.
Shere, O. M., Denver.
Wood, W. H., Greeley.
Wilkinson, W. W., Silverton.

CONNECTICUT.

Heady, E. B., Milford.
Lewis. J. B., Hartford.
Loomis, F. N., Derby.
McCabe, E. M., New Haven.
Smirnow, Louis, Bridgeport.
Streit, George, Middletown.
Witter, Wm., Norwich.
Young, C. B., Middletown.

DISTRICT OF COLUMBIA.

Biscoe, F. L., Washington.
Duffey, H. C., Washington.
Key, Sothoron, Washington.

GEORGIA.

Champion, W. L., Atlanta.

HAWAII.

Day, F. R., Honolulu.
Armitage, Edw., Wailuku, Mani.

IDAHO.

Boyd, T. O., Twin Falls.
Collister, Geo., Boise.
Coultchard, G. H., Idaho Falls.
Clouchek, H. W., Twin Falls.
Gritman, C. L., Moscow.
Hamilton, J. J., Caldwell.
Hall, O. L., Star.
Jordan, M. S., Grand Mound.
Moody, C. S., Sand Point.
Murray, J. H. Nampa.
Phillips, C. C., Lewiston.
Springer, W. D., Boise.

ILLINOIS.

Bailey, C. W., Hebron.
Bailey, G. T., Chicago.
Baldwin, B. H., Chicago.
Burch, G. W., Quincy.
Bussey, G. N., Chicago.
Bell, A., Chicago.
Clune, P. J., Ottawa.
Coone, B., Chicago.
Crowder, T. R., Chicago.
Crouch E. L., Jacksonville.
Conner, E. M., Chicago.
Dagg, T. L., Chicago.
Dicus, G. A., Streator.
Duncan, C. E., Flora.
Foster, T. J., De Soto.
Fiske, D., Chicago.
Gaebler, Arthur, Chicago.
Githens, W. K., Hamilton.
Greig, T. O., Chicago.
Hester, E. E., Paxton.
Hansen, G. H., Chicago.
Harper, J. E., Chicago.
Huey, W. B., Chicago.
Hamilton, J. W., Mt. Vernon.
Hassin, G. B., Chicago.
Frank, I., Chicago.
Kieene, F. R. C., Chicago.
Lemen, H. R., Alton.
Leonard. E. F., Chicago.
Lurie, W. A., Chicago.
Lyon, C. E., Toledo.
MacDowell, E. G., Chicago.
McCornack, E. A., Elgin.
Merki, E. J., Chicago.
Miller, G. P., Chicago.
Miller, J. E., Pittsfield.
McGuire, J. W., Chicago.
Peter, R., Chicago.
Presler. H. M., Cullom.
Presnell, J. F., Chicago.
Phillips, D. C., Chicago.
Podstata, V. H., Dunning.
Rosenow, E. C., Chicago.
Reid, D. W., Jacksonville.
Rochow, C. J. F., Rock Island.
Remmen, N. E., Chicago.
Rudy, F. T., Champaign.
Vary, W. H., Chicago.
Vaupell, W. R., Chicago.
Washburn, W. E., Kewanee.
Whise, M., Chicago.

INDIANA.

Brill, J. H., Indianapolis.
Black, F. W., Ligonier.
Calvin, J. Carruthers, Ft. Wayne.
Cooper, J. A., Terre Haute.
Daugherty, C. A., South Bend.
Freeland, J. L., Indianapolis.
Hawn, C. E., Little York.
Mattison, J. A., Nat. Mil. Home.
McFarlin, J. T., Williams.
Miller, H. H., Galveston.
Niblack, E. S., Terre Haute.
Ritter, M. T., Angola.
Whitesides, L. L., Franklin.
Westover, R. L., Indianapolis.

IND. TERRITORY.

Looney, R. E., Lindsay.

IOWA.

Burgess, J. A. W., Iowa Falls.
Brubaker, J. F., Hubbard.
Bridgman, J. C., Radcliffe.
Breniman, E. M., Ackley.
Butler, F. P., Whitten.
Bartran, R. T., Albia.
Corbit, A. B., Wyoming.
Caldwell, J. W., Steamboat Rock.
Caldwell, J. Willard, Steamboat Rock.
Conner, F. H., Nevada.
Cronk, C. H., Bloomfield.
Dittmer, H. A., Manchester.
Evans, F. J., Iowa Falls.
Hobson, A. J., Hampton.
Hunter, W. W., Monticello.
Hartman, F. T., Waterloo.
Jones, E. H., Eldora.
Koeneman, E. O., Eldora.
Lowder, Wm., New Providence.
McLaughlin, C. W., Washington.
Miller, J. J., Ackley.
Moore, M. F., Martinsburg.
Mabee, C. O., New Providence.
Marsh, W. E., Eldora.
Morton, L. B., Iowa Falls.
Murphy, F. J., Sioux City.
Pagelson, O. H., Iowa Falls.
Petrovitsky, J. S., Cedar Rapids.
Rabe, F. L., Hubbard.
Roberts, W. P., Cleghorn.
Scarborough, H. V., Grand Junction.
Sanders, W. E., Alta.
Stone, Guy, Keswick.
Sherman, A. M., Grinnell.
Trimble, C. S., Buckeye.
Underwood, R. B., Eldora.
Vroom, C. W., Ackley.
Wood, P. R., Marshalltown.
Walker, J. R., Ft. Madison.
Whitney, W. E., Eldora.
Willett, C. C., Whitten.
Wray, C. M., Lawton.
White, E. E., Huxley.

KANSAS.

Boss, J. H., Weir City.
Buley, D. G., Valley Center.
Blades, S. T., Scottsville.
Chadwick, I. B., Tyro.
Fabrigur, A. H., Wichita.
Holt, T. T., Geudo Springs.
Hartwell, G. N., Jamestown.
Hardesty, H. O., Jennings.
Humfreville, D. W., Waterville.
McManis, J. E., Havensville.
Nichols, S., Herington.
Nye, W. W., Hiawatha.
Shelton, F. W., Independence.
Snyder, H. G., Seneca.
Spitler, S. W., Wellington.
Shannon, L. W., Hiawatha.
Ullman, J. F., Simpson.
Wilson, W. P., Westmoreland.

KENTUCKY.

Hendon, G. A., Louisville.
Lex, E. A., Louisville.
Mosely, J. C., Henderson.
Price, A. D., Harrodsburg.

LOUISIANA.

Burley, C. H., Monterey.
Feucht, E. P., Laplace.

MAINE.

Merrill, H. P., Portland.
Price. W. N., Richmond.
Washburn, G. E., Augusta.
Walton, R. D., Frankfort.

MARYLAND.

Davidson, C. F., Easton.
Goodman, J. M., Frederick.
Hall, R. M., Baltimore.
Harrison, H. T., Loch Raven.
Kahn, H., Baltimore.
Legge, J. E., Oakland.
McNeer, R. L., Baltimore.
Magruder, W. E., Cany Spring.
Spear, I. J., Baltimore.
Seymour, W. S., Trappe.
Wilcox, F. W., Baltimore.

MASSACHUSETTS.

Bacon, T. S., Cambridge.
Chase, E. L., Shrewsbury.
Cunningham, J. H., Jr., Boston.
Dwight, Thos., Nahant, Mass.
Glendenning, R. T., Manchester.
Hunt, W. O., Newtonville.
Haines, I., Cambridge.
Hubbard, J. C., Boston.
Jackson, H. B., Melrose.
Murdock, F. W., Brockton.
McPherson, G. E., S. Boston.
Morse, F. L., Somerville.
Murphy, E. M., Lowell.
Newhall, H. W., Lynn.
Nichols, J. H., Tewksbury.
Osborne, C. A., Worcester.
Porter, R. B., North Easton.
Richardson, F. L., Concord.
Tyrode, M. V., Boston.
Trainor, J. B., Fall River.
Wadsworth, O. F., Boston.
Whiton, R. K., Quincy.

MICHIGAN.

Baird, R. H., Howell.
Brook, J. D., Grandville.
Bryant, S. E., Dowagiac.
Elmer, W. P., Ann Arbor.
Hart, A. O., Maple Rapids.
Hewitt, H. W., Detroit.
Johnson, B. F. P., Rosebush.
McCarroll, Wm., Pontiac.
McKnight, E. E., Alpena.
Matchette, W. H., Hancock.
McBean, Jas. C., Applegate.
Shattuck, G. S., Detroit.
Sigel, T., Detroit.
Wessinger, J. A., Ann Arbor.

MINNESOTA.

Barsness, N. O. N., St. Paul.
Cowles, D. C., Minneapolis.
Dart, L. O., Minneapolis.
Hougan, O. M., Fergus Falls.
Pare, L. T., Duluth.
Rutledge, J. W., Minneapolis.
Salter, W. H., Duluth.
Stuart, J. H., Minneapolis.
Sawyer, H. P., Goodhue.
Theissen, W. N., Henderson.
Whitacre, J. C., St. Paul.

MISSISSIPPI.

Rauch, E. S., Vicksburg.
Simmons, C. L., McBride.

MISSOURI.

Austin, M. B., Brunswick.
Clagett, O. F., Jamesport.
Crawford, H. S., Harrisonville.
Davenport, R. G., Trenton.
Fleming, A. W., St. Louis.
Gulbor, H. F., St. Louis.
Gashwiler, —, Novinger.
Hall, D. W., Kansas City.
Matlock, C. E., St. Louis.
Moore, E., St. Louis.
Miller, H., Kansas City.
Schulte, F. A., St. Louis.
Smith, B. T., Newburg.
Trimble, W. K., Kansas City.

MONTANA.

Lilly, A. H., Butte.
Moore, T. B., Butte.
Pampol, B. L., Livingston.
Pigot, C. T., Butte.

NEBRASKA.

Guttery, J. D., Valparaiso.
Isaacs, D., Winside.
Kraft, F. E., So. Auburn.
Quigley, D. T., No. Platte.
Robbins, E. E., Hastings.
Smrha, V. V., Milligan.

NEW HAMPSHIRE.

Locke, E. M., Nashau.
Palmer, H., Plymouth.

NEW JERSEY.

Baker, R. D., Summit.
Drummond, E. A., Newark.
Hoagland, G. G., Keyport.
Leonard, E., Jersey City.
Martland, W. H., Newark.

NEW MEXICO.

Smith, H. M., Las Vegas.
Thomson, R. J., Santa Rosa.
Yoakam, F. A., Cerrillos.

NEW YORK.

Benedict, A. J., Newburgh.
Berlin, F. F. R., New York.
Cooke, W. S., New York.
Conklin, R. C., Batavia.
Comfort, C. G. V., Rochester.
Dort, E., Buffalo.
Duggan, John, Albion.
Eytinge, O. J., Brooklyn.
Fuller, N. H., Friendship.
Friedman, L. A., New York.
Gross, M., New York.
Grady, J. J., New York.
Glenny, W. H., Buffalo.
Griggs, E. C., Ithaca.
Herst, S., New York.
Hopkins, F. T., New York.
Holland, A. L., New York.
Jackson, C. R., New York.
Latham, O. N., Bolivar.
Leibermann, J. M., New York.
Lewson, M., New York.
Lo Pinto, J., New York.
Lytle, C. G., Geneva.
McBurney, Charles, New York.
Meisburger, W., Buffalo.
Mooney, L. M., New York.
MacCoy, C., Brooklyn.
McParlan, J. P., New York.
Neal, V. F., Ellenville.
Nicolai, C., New York.
Preisch, E. L., Lockport.
Page, C. C., New York.
Pattison, W. E., Westport.
Potter, I. W., Buffalo.
Remington, A. C., Rochester.
Rushmore, E. C., Tuxedo Park.
Stewart, E. W., Hume.
Sayres, C. O., Belfast.
Stein, S. A., New York.
Woodroff, C. E., Plattsburg.
Winter, H. L., Cornwall.
Wheeler, D. E., Buffalo.

NORTH CAROLINA.

Austin, J. A., Charlotte.
Busby, J. G., Spencer.
Anders, McG., Connelly Springs.
Davis, R. L., Bryson City.
Harrill, L. B., Caroleen.

Joyner, R. W., Woodland.
Patrick, G. R., Lowell.
Reitzel, J. R., High Point.

NORTH DAKOTA.

Bates, W. H., Grand Forkes.
Burton, P. H., Fargo.
Claybaugh, W. R., Litchfield.
O'Brien, T., Wahpeton.

OHIO .

Bennett, J. H., Youngstown.
Blott, H. E., Youngstown.
Browning, C. H., Oberlin.
Brainerd, H. C., Cleveland.
Coe, E. W., Youngstown.
Christopher, W. H., London.
Crawford, G. M., Lorain.
Costello, T. A., Cleveland.
Dye, J. H., Cleveland.
Easton, J. C., Springfield.
Feiss, H. O., Cleveland.
Freeman, C. D., Medina.
Hawes, S. A., Greenville.
Hutchins, F. C., Cleveland.
Ingraham, F., Curtice.
Jacobs, H. H., Akron.
Kahn, M., Cleveland.
McPeck, E. E., Cleveland.
Pearson, G. L., Youngstown.
Parrish, R. C., Youngstown.
Ruel, J. J., Cleveland.
Runyan, M. T., Oberlin.
Snyder, F. D., Ashtabula.
Stone, W. J., Toledo.
Sharkey, B., Middletown.
Whitslar, W. H., Cleveland.
Williams, C. D., Cleveland.
Yocum, L. A., Wooster.
Yates, E. A., Kirkwood.

OKLAHOMA.

Beall, C. G., Oklahoma City.
Hahn, L. A., Guthrie.
Mitchell, E. B., Anadarko.
Steagall, T. R., Blackwell.

OREGON.

Belt, W. C., Portland.
Booth, W. H., Lebanon.
Bailey, A. B., Hillsboro.
Bailey, F. J., Hillsboro.
Boyd, W. H., Portland.
Braden, W. B., Portland.
Bristow, J. H., Portland.
Cathey, B. A., Corvallis.
Chilton, L. W., Canyon City.
Carrico, J. H., Woodburn.
De Vaul, O., Portland.
Douglas, G. H., Grant's Pass.
De Armond, R. S., Grant's Pass.
Ellis, M. H., Albany.
Farra, G. R., Corvallis.
Gullette, Fred, Portland.
Harris, J. W., Eugene.
Holcomb, C., Portland.
Hall, J. E., Clatskanie.
Hawke, C. E., Portland.
Harris, T. W., Eugene.
Hockett, C. T., Cottage Grove.
Hawk, W. C., Jefferson.
Jayne, R. A., Springfield.
Johnson, E. D., Portland.
Kime, A. W., Cottage Grove.
Kistner, F. B., Heppner.
Lane, H., Portland.
Lee, C. H., Corvallis.
Lewis, W. E., Seaside.
Lowe, J. M., The Dalles.
Mattson, R. C., Portland.
Marsh, R. J., Portland.
Prill, A. G., Scio.
Pernot, H. S., Corvallis.
Pogue, G. A., Ontario.
Pearce, C. M., Sumpter.
Pierce, E. A., Salem.
Ringo, R. E., Pendleton.
Robinson, F. M., Beaverton.
Rosenberg, J. H., Primeville.
Stott, J. S., Portland.
Scarbrough, L. D., Creswell.
Sternberg, J. D., Portland.
Silover, F. E., Eugene.
Smith, F. E., Salem.
Shaw, H. M., Ashland.
Trimble, W. A., Albany.
Timms, E. D., Portland.
Wood, W. D., Hillsboro.
Wade, C. E., Drain.
Watt, J. F., Hood River.
Wells, G. M., Portland.

PENNSYLVANIA.

Allen, C. W., Ambridge.
Bland, P. B., Philadelphia.
Baker, F. N., Media.
Brubaker, A. P., Philadelphia.
Crow, A. E., Uniontown.
Campbell, O. C., Philadelphia.
Frantz, G. B., Coal Center.
Gilliland, S. H., Philadelphia.
Horning, S. B., Lower Providence.
Hersman, C. C., Pittsburg.
Kachline, J. C., So. Bethlehem.
Linn, C. F., Monongahela.
Mitchell, C. F., Philadelphia.
McGrath, J. F., Pittsburg.
Maxwell, J. R., Parkersburg.
Remington A H., Philadelphia.
Rugh, W. J., Pittsburg.
Stayer, A. S., Altoona.
Sommer, H. J., Jr., Norristown.
Stranahan, G. W., Erie.
Taylor, F. H., Uniontown.
Voigt, C. H., Allegheny.
Weber, C. Z., Norristown.
Wormser, B. B., Scranton.
Zern, J. G., Lehighton.

RHODE ISLAND.

Brown, F. N., Providence.
Graham, S. P., Providence.
Kirby, W. W., Providence.
O'Neil, J. E., Providence.

SOUTH CAROLINA.

Buist, A. J., Charleston.
Giles, C. T. J., Greenville.
Johnston, J. G., Chester.
Wilson, J. R., Charleston.
Wylie, A. M., Chester.

SOUTH DAKOTA.

Carson, S. L., Lower Brule.
Frink, O. G., So. Shore.
Keller, W. F., Sioux Falls.
Townsend, L. J., Belle Fourche.

TENNESSEE.

Lewis, A. W., McCays, Tenn.
McRady, F. S., Petersburg.
Turner, A. E., Neboville.

TEXAS.

Adams, W. J., Robert Lee.
Huffaker, D. H., El Paso.
De Steigner, J. R., San Marcus.
Lester, H. B., Corsicana.
Lay, J. E., Jr., Sweet Home.
Latham, W. W., Porter Springs.
Simmons, C. B., Decatur.
White, A. H., El Paso.

UTAH.

Field, G. J., Eureka.
Stewart, M. R., Salt Lake City.
Stookey, W. M., Lehi, Utah.
Pinkerton, S. H., Salt Lake City.
Wade, W. A., Payson.

VERMONT.

Hunter, J. W., Jr., Norfolk.
Perkins, H. B., Croton.

VIRGINIA.

Clark, J. P., Lynchburg.
Tulloss, W. R., Haymarket.
Wiseman, H. A., Jr., Danville.

WASHINGTON.

Allen, H. E., Seattle.
Adair, B. A. O., No. Yakima.
Baker, B. L., Everett.
Cardwell, W. C., Pomeroy.
Coberly, L. J., Garfield.
Douglas, Wm., Tacoma.
De Beck, D., Seattle.
Engels, C. F., Ballard.
Ferguson, T. D., Colfax.
Fitch, H. J., Ellensburg.
Greene, H. M., La Crosse.
Gaines, W. S., Oakesdale.
Gibson, W. E., Issaquah.
Hood, C. S., Ferndale.
Ingram, J. W., Walla Walla.
Johnson, S. H., Bellingham.
Kinnear, C. H., Tacoma.
Keith, R. L., Seattle.
Kennecott, G. W., Chehalis.
Lyons, J. H., Seattle.
Luce, F. H., Davenport.
Morrison, W. F., Spokane.
Matthews, A. A., Spokane.
Maguire, Edw., Pullman.
Rose, F., Spokane.
Robins, M. C., Spokane.
Stevens, E. W., Dryad.
Shannon, W. A., Seattle.
Stafford, E. A., Snohomish.
Sellors, Wm., Spokane.
Stuht, A. E., Colfax.
Swearingen, P. B., Tacoma.
Smith, J. S., Bellingham.
Sargentich, S., Tacoma.
Woodin, S. P., Georgetown.
Wotherspoon, John, Seattle.
Warmburg, G. F., Seattle.
Wing, P. R., Tacoma.
West, W. F., Everett.

WEST VIRGINIA.

Henry, C. O., Fairmont.
Martin, E. T., Keyser.
Riedy, J. A., Monongah.
Slusher, W. C., Burnwell.
Walkinshaw, J. B., Wellsburg.

WISCONSIN.

Ashum, D. W., Eau Claire.
Bock, O. B., Sheboygan.
Bartran, W. H., Green Bay.
Christensen, J. W., Kendall.
Cleary, J. L., Kenosha.
Dahl, L. A., Stanley.
Elliott, S. T., Richland Center.
Fulton, W. A., Burlington.
Finstad, G. J., Menomonee.
Gibbs, G. L., Marshall.
Kitzki, W., Manawa.
Kelly, D. M., Baraboo.
Muth, Carl, Sheboygan.
Milbee, H. H., Marshfield.
Maurer, A. A., La Crosse.
Moody, L., Superior.
McDonald, H. F., Hollandale.
Neilson, W. H., Milwaukee.
Orchard, H. J., Superior.
Peterson, G. E., Waukesha.
Ridgman, A. L., Grand Rapids.
Senn, F. C., Oshkosh.
Scheib, G. F., Fond du Lac.
Trevitt, A. W., Wausau.
Teich, Wm., Milwaukee.
Zillisch, W. E., Hortonville.

WYOMING.

Bradfield, J. H., Sheridan.

State Boards of Registration

COMING EXAMINATIONS.

State Board of Medical Examine[illegible] [illegible]ancisco, August 15. Secretary, Charles L. [illegible]

Wyoming State Board of Medi[illegible] [illegible]Capitol, Cheyenne, Wyo., September 6. Sec[illegible] [illegible]imie.

Massachusetts Board of Registra[illegible] [illegible] House, Boston, September 12-13. Secretar[illegible]

Arkansas July Report.—Dr. J. P. Runyan, secretary of the State Medical Examining Board of the Arkansas Medical Society, reports the examination held at Little Rock, July 11, 1905. The number of subjects examined in was 7; total number of questions asked, 50; percentage required to pass, 75. The total number of candidates examined was 28, of whom 19 were undergraduates; 18 passed, and 10 failed. The following colleges were represented:

PASSED.

College.	Year Grad.	Per Cent.
College of P. and S., Chicago (undergraduate)		85
Fisk University	(1900)	85
Flint Med. Coll. (undergraduates) 82, 76;	(1905)	80
Memphis Hosp. Mec [illegible]		76
Barnes Med. Coll.		81
Washington Univers[illegible]	(1903)	84
Tulane and Vander[illegible]		92
Tulane University	(1905)	94
Shaw University (undergraduate)		81
Milwaukee Med. Coll.		94
University of Nashville (undergraduate)		83
University of Missouri (undergraduate)		75
Medico-Chirurgical, Kansas City	(1905)	78

FAILED.

College.	Year Grad.	Per Cent.
Galveston and Memphis Hosp. Med. Coll. (undergraduate)		43
University of Missouri (undergraduate)		53
University of Nashville and Baylor Med. Coll. (undergraduate)		69
Universities of Arkansas and Nashville (undergraduate)		58
Flint Med. Coll.	(1905)	59
Tulane University (undergraduate)		66
Louisville Med. Coll. and Tulane Univ. (undergraduate)		63
Knoxville Med. Coll.	(1903)	69
Memphis Hosp. Med. Coll. (undergraduate)		58
Memphis Hosp. Med. Coll. and Barnes Med. Coll. (undergraduate)		67

South Carolina June Report.—Dr. W. M. Lester, secretary of the South Carolina State Board of Medical Examiners, reports the written examination held at Columbia, June 13-15, 1905. The number of subjects examined in was 18; total number of questions asked, 95; percentage required to pass, 75, and not less than 60 on any subject. The total number of applicants examined was 66, of whom 44 passed and 22 failed. The following colleges were represented:

PASSED.

College.	Year Grad.	Per Cent.
Medical Coll. of the State of South Carolina, (1900) 89.6; (1905) 77.2, 80.1, 81.2, 81.8, 82.1 82.6, 82.8, 83.2, 83.6, 83.8, 85, 85.3, 85.3, 86.3, 87.1, 88.1, 88.5, 93.2.		
[illegible] (1901) 89.1;	(1903)	89.6
[illegible]	(1904)	81.7
[illegible]	(1904)	79.2
[illegible] (1902) 76;	(1905)	80.1
[illegible]	(1905)	86.1
[illegible]	(1905) 75.5, 82.3, 87,	92.7
Leonard Med. Coll.	(1902)	75
University of Maryland	(1904) 80.5, 81, 82, 78.6, 75,	83.7
Jefferson Med. Coll.	(1905) 78,	83.3
Tulane University	(1905) 79.7,	81
College of P. & S., Atlanta	(1900)	81.1
Baltimore Med. Coll.	(1905)	84
College of P. and S. Baltimore	(1904)	75

FAILED.

College.	Year Grad.	Per Cent.
Medical Coll. of the State of South Carolina, (1901) 60.2; (1905) 79.3,* 70.2, 78.6,* 76.8,* 78.8,* 79.8.*		
North Carolina Med. Coll.	(1903)	80.6*
University of the South	(1904)	74.1**
University of Kentucky	(1904)	79*
Leonard Med. Coll. (1889) 66.5;	(1905)	75*
Chattanooga Med. Coll.	(1905) 55.3,	59.3
University of Tennessee	(1905)	52.2
Meharry Med. Coll.	(1905)	75*
Maryland Med. Coll. (1904) 56.6;	(1905)	39.3
University of Maryland	(1905)	79.3*

Tulane University	(1904)	77.2*
Knoxville Med. Coll.	(1904)	69.7

* Below 60 per cent. on one or more subjects.

** Left examination on account of illness.

The general average attained by all representatives of the medical college of the state of South Carolina, who passed, was 84.5.

The Public Service

Army Changes.

Memorandum of changes of stations and duties of medical officers, week ending Aug. 5, 1905:

Halloran, Paul S., asst.-surgeon, leave of absence extended two months.

Ragan, Chas. A., asst.-surgeon, granted thirty days' leave of absence.

Clayton, Jere B., asst.-surgeon, assigned to duty at Fort Leavenworth, Kan., and granted fifteen days' leave of absence before reporting for duty.

Baker, David, asst.-surgeon, relieved from duty at Fort Leavenworth, Kans., and ordered to Fort Robinson, Neb., for duty.

Porter, Ralph S., asst.-surgeon, relieved from duty at Fort Niobrara, Neb., and ordered to Manila, P. I., for duty.

Woodbury, F. T., asst.-surgeon, ordered to accompany 3d Battalion, 5th Infantry, from Plattsburg Barracks, N. Y., to Sea Girt, N. J., for duty, and return with same.

Woodall, Wm. P., asst.-surgeon, left from detached duty at Fort Oglethorpe, Ga., on fifteen days' leave of absence.

Roberts, William, asst.-surgeon, ordered to accompany detachment from Fort Hamilton, N. Y., to Sea Girt, N. J., on Sept. 12, 1905, and remain at camp in charge of the medical department.

Wing, Franklin F., dental surgeon, granted leave of absence for one month, fifteen days, from Fort Riley, Kan.

Marshall, John S., examining and supervising dental surgeon, returned to the Presidio of San Francisco, from attendance on the American Medical Association and the Lewis and Clark Dental Congress at Portland, Ore.

[illegible] dental surgeon, returned to Vancouver Bar[illegible]om attendance on the Lewis and Clark Dental [illegible] Ore.

[illegible] contract surgeon, returned to Fort Douglas, Utah, from duty in the field, Strawberry Valley, Utah.

Macy, Fred S., contract surgeon, left Allegheny Arsenal, Pa., on leave of absence for ten days.

Warwick, Clarence A., contract surgeon, arrived from the Philippines Division on the transport *Warren*, for four months' leave of absence.

Navy Changes.

Changes in the Medical Corps, U. S. Navy, for the week ending Aug. 5, 1905:

Shipp, E. M., surgeon, orders to the *Charleston* revoked; ordered to the Navy Yard, New York, N. Y.

J. F. Leys and J. C. Thompson, surgeons, commissioned surgeons, with rank of lieutenant-commander, from March 3, 1903.

Furlong, F. M., P. A. surgeon, ordered to the Bureau of Medicine and Surgery, Navy Department.

Dessez, P. T., asst.-surgeon, ordered to the *Charleston*.

Ledbetter, R. E., P. A. surgeon, detached from the *Detroit* and ordered to the Naval Hospital, Boston.

Wise, J. C., medical director, detached from duty as a member of the Naval Medical Examining Board and Naval Retiring Board, Washington, D. C., August 10, and ordered to duty as president of the Naval Medical Examining Board, Naval Medical School, and to command Naval Medical School.

Marmion, R. A., medical director, detached from duty as president of the Naval Medical Examining Board, Naval Medical School, Washington, D. C., and from command of the Naval Medical School and ordered to duty as a member of the Naval Medical Examining Board and Naval Retiring Board, Mills Building, Washington, D. C.,

Munger, C. B., asst.-surgeon, ordered to the Naval Hospital, Norfolk, Va.

Marshall, E. R., asst.-surgeon, ordered to the Naval Hospital, Washington, D. C.

May, H. A., Asst.-surgeon, detached from the *Franklin* and ordered to the *Iowa*.

Sellers, F. E., acting asst.-surgeon, ordered to the *Franklin*.

Webb, U. R., P. A. surgeon, detached from the Bureau of Medicine and Surgery, Navy Department, and ordered to the Naval Academy.

Jennes, B. F., asst.-surgeon, detached from the *Iowa* and ordered home to wait orders.

Cole, H. W., asst.-surgeon, orders of July 31 modified; ordered to the Maine.

Public Health and Marine-Hospital Service.

List of changes of station and duties of commissioned and noncommissioned officers of the Public Health and Marine-Hospital Service for the seven days ending Aug. 2, 1905:

Magruder, G. M., surgeon, designated as member of Revenue Cutter Service retiring board at San Francisco, Aug. 10, 1905.

Wertenbaker, C. P., surgeon, relieved from duty at Havana, Cuba, and directed to proceed to Tampa, Fla., Montgomery, Ala., and Atlanta, Ga., for special temporary duty.

Cumming, H. S., P. A. surgeon, designated as member of Revenue Cutter Service retiring board at San Francisco, August 10.

Corput, G. M., P. A. surgeon, relieved from duty at the Marine Hospital, New Orleans.

Currie, D. H., P. A. surgeon, department letter of July 1, 1905, granting leave of absence for two months from July 6, 1905, amended to read two months from July 18.

Goldberger, Jos., P. A. surgeon, to proceed to Vicksburg, Miss., and Shreveport, La., and other places in Mississippi and Louisiana, for special temporary duty.

Berry, T. D., P. A. surgeon, to rejoin station at New York, and then to proceed to New Orleans and to report to Surgeon J. H. White for special temporary duty.

Burkhalter, J. T., asst.-surgeon, leave of absence for one month on account of sickness, granted by bureau letter of July 17, 1905, revoked.

Wightman, W. M., asst.-surgeon, granted extension of leave of absence for seven days from August 9.

Spratt, R. D., asst.-surgeon, to proceed to Gulf quarantine station and report to medical officer in command for temporary duty.

Hallett, E. B., acting asst.-surgeon, granted leave of absence for four days from July 28.

Kennard, K. S., acting asst.-surgeon, granted leave of absence for twenty-one days from August 7.

Marr, H., acting asst.-surgeon, granted leave of absence for twenty-one days, from August 21.

Sinclair, A. N., acting asst.-surgeon, department letter of July 10, 1905, granting leave of absence for thirty days from July 8, amended to read thirty days from July 12.

Williamson, S. D., acting asst.-surgeon, granted extension of leave of absence for twenty-two days, from July 31.

MacDowell, W. F., pharmacist, granted leave of absence for thirty days, from August 10.

Carlton, C. G., pharmacist, leave of absence for twenty-nine days, from July 24, 1905, revoked.

Morris, G. A., pharmacist, to proceed to New Orleans, and report to Surgeon J. H. White for special temporary duty.

BOARD CONVENED.

Board to meet at the Marine Hospital, Portland, Me., July 31, 1905, for the physical examinaton of an officer of the Revenue Cutter Service. Detail for the board: Surgeon W. P. McIntosh, chairman; Acting Assistant Surgeon A. F. Stuart, recorder.

PROMOTIONS.

Assistant Surgeon M. W. [illegible] [illegible]ecess) as P. A. surgeon, to rank as such [illegible]

Assistant Surgeon B. H. Ear[illegible] as P. A. surgeon, to rank as such from [illegible]

Assistant Surgeon C. C. Pierce, commissioned (recess) as P. A. surgeon, to rank as such from June 27, 1905.

Health Reports.

The following cases of smallpox, yellow fever, cholera, and plague, have been reported to the Surgeon-General, Public Health and Marine-Hospital Service, during the period from July 15 to July 29, 1905:

SMALLPOX—UNITED STATES.

California: Los Angeles, July 8-15, 4 cases.
District of Columbia: Washington, July 15-22, 1 case.
Illinois: Chicago, July 15-22, 11 cases, 1 death.
Indiana: South Bend, July 15-22, 1 case.
Michigan: Grand Rapids, July 15-22, 5 cases, 1 death.
Missouri: St. Joseph, July 8-15, 4 cases.
New York: Rome, July 15-22, 1 case.
Ohio: Cincinnati, May 19-June 2, 9 cases; June 8-23, 6 cases.
Pennsylvania: York, July 15-22, 11 cases.
Wisconsin: Appleton, July 15-22, 1 case.

SMALLPOX—FOREIGN.

Africa: Cape Colony, Cape Town, June 18-24, 3 cases.

Brazil: Rio de Janeiro, June 11-July 2, 32 cases, 21 deaths.

Chile: At Ports, June 14, present.

France: Lyon, July 2-9, 1 case; Paris, July 1-8, 10 cases, 1 death.

Great Britain: Birmingham, July 1-8, 1 case; Bristol, July 8-15, 1 case; Cardiff, 3 cases; [illegible] [illegible]-8, 5 cases.

Greece: Athens, June [illegible]

India: Bombay, June [illegible] June 10-17, 2 deaths; Karachi, June 11 [illegible] [illegible]as, June 10-23, 5 deaths.

Italy: General, June 29-July 6, 8 cases; Catania, 3 deaths; Messina, June 25-July 2, 1 case; Palermo, July 1-8, 1 case.

Mexico: City of Mexico, June 24-July 15, 20 cases, 10 deaths.

Canada: New Brunswick, St. John, July 14, 1 case, imported.

Panama: Bocas del Toro, July 1-7, 1 case, imported.

Russia: Moscow, June 17-July 1, 9 cases, 6 deaths; Odessa, June 25-July 8, 10 cases, 1 death; St. Petersburg, June 24-July 1, 13 cases, 2 deaths.

Spain: Barcelona, June 1-10, 2 cases.

Turkey: Constantinople, June 18-25, 4 cases.

Venezuela: Maracaibo, June 6-July 2, 4 cases, 4 deaths.

West Indies: Grenada, June 15-29, 5 cases.

YELLOW FEVER—UNITED STATES

Florida: Tampa, July 28, 1 case.
Louisiana: New Orleans, July 21-26, 73 cases, 22 deaths.

YELLOW FEVER—FOREIGN.

Brazil: Rio de Janeiro, June 11-July 2, 84 cases, 40 deaths.

[illegible] [illegible]elize, July 6-13, 1 case.

[illegible] July 7, present; Puerto Cortez, July 1-17, 20 [illegible] Pedro, July 15, 200 cases; 15 deaths.

Mexico: Coatzacoalcos, July 9-15, 2 cases; Tierra Blanca, 3 cases, 1 death; Vera Cruz, 1 case, July 23-25, 4 cases.

Panama: Colon, July 2-11, 5 cases, 1 death.

CHOLERA.

India: Bombay, June 13-20, 3 cases; Calcutta, June 10-17, 8 deaths; Madras, June 17-23, 1 death.

PLAGUE—FOREIGN.

Africa: Cape Colony, East, London, June 3-24, 6 cases, 3 deaths; King Williams Town, June 17-24, 1 case.

Brazil: Rio de Janeiro, June 18-July 2, 6 cases, 2 deaths.

China: Hongkong, May 13-20, 20 cases, 19 deaths.

Egypt: General, June 10-24, 25 cases, 16 deaths.

India: Bombay, June 4-27, 221 deaths; Calcutta, June 10-17, 37 deaths; Karachi, June 11-25, 85 deaths; Madras, June 10-16, 1 death.

Japan: Formosa, May 1-31, 734 cases, 622 deaths, June 1-20, 213 cases, 184 deaths.

Peru: Callao, June 1-10, 1 case; Cerro de Paseo, 1 case, 1 death; Lima, June 1-10, 6 cases, 2 deaths; Mollendo, June 1-10, 1 case, 2 deaths.

Society Proceedings

AMERICAN ASSOCIATION OF LIFE INSURANCE EXAMINING SURGEONS.

Sixth Annual Meeting, held at Portland, Ore., July 10, 1905,

The President, Dr. Denslow Lewis, Chicago, in the Chair.

(Concluded from Page 418.)

The Recognition of Drug Addictions in Life Insurance.

Dr. T. D. Crothers, Hartford, Conn., said that 30 per cent. or more of all alcoholics also take drugs. He divided the drug-takers into two classes, the simple and the complex, and gave a summary of some of the facts on which the recognition of drug addiction must turn. He believes that a careful examination of the sight, hearing, taste and smell will generally show the condition, notwithstanding the denials of the applicant, and that when psychologic studies of applicants for life insurance are made with as much minuteness as examinations of the heart, urine and blood, the hazardous risk of drug-takers as healthy normal persons will be eliminated.

Dr. J. T. Priestley, Des Moines, thought that the insurance companies suffered more from the drug-taker than any other class of people.

Dr. J. Allen Gilbert, Portland, thought too little attention was given to this phase of examinations and referred to a series of tests which he employed in examining the nervous system.

The address of the president, Dr. Denslow Lewis, Chicago, was on the subject: "The Medical Examiner and His Work."

Women as Risks.

Dr. Mae H. Cardwell, Portland, Ore., commented on the physical and moral conditions of women which make for or against their eligibility as risks in insurance. Until women have become financial independents they will never be equal factors for the consideration of the companies. Statistics of the life of the female should be created. The mortality in men from the effects of liquor is vastly in excess of that of women. Deaths from kidney infection through gonorrhea are as common among men as are deaths in women from the same infection of the generative apparatus. She strongly recommended that physical examination of women for insurance be extended to palpation and inspection of the pelvis, unless satisfactory evidence is given that the organs are healthy. Loyalty to the companies should prompt a warning to the applicants against habits which may develop disease, yet this warning may be exaggerated by a nervous woman. Suicide in business women is a danger to be considered.

DISCUSSION.

Dr. H. G. Brainerd, Los Angeles, thought the position of women as risks a question yet to be determined. It would add much to the willingness of companies to take such risks if it were known that the pelvic organs were in good condition.

Dr. J. Allen Gilbert, Portland, insisted the pelvis ought to be examined.

Dr. Amos, Portland, spoke of the difficulty of finding the evidence of gonorrhea even when the disease is known to exist.

Dr. W. J. Means, Columbus, said that in his experience in the examination of women for fraternal insurance he has found a lower mortality among women than among men.

Dr. A. Merrill Miller, Danville, spoke of the difficulty of examining a woman at her home, and of the reluctance of a woman to submit to the ordeal of an examination when she realizes its extent.

Dr. J. R. Wetherbee, Portland, referred to the necessity for pelvic examination brought to his attention by operations. The conditions which caused the operations would have been revealed by a pelvic examination at the time insurance was issued.

Dr. Cardwell said that she believed a large majority of women would submit to pelvic examinations if the requirements were printed in the application. She does not feel that the drug habit is so important a question among women as that of suicide.

The Relation of the Life Insurance Examiner to Local Sanitation.

Dr. J. R. Wetherbee, Portland, said that the function of a physician as a life insurance examiner should not only be to report the facts concerning a given risk, but to see that the forces in his locality which tend to raise or lower the mortality receive attention. Few physicians know where the sewers of their respective cities empty their contents. In his opinion equal responsibility rests on the physician in the matter of educating the public in the prevention of tuberculosis. He called attention to combination policies which furnish indemnity against loss of health as well as loss of life on the same principles as fire insurance. Should this policy become universal, the responsibility of the insurance examiner for the local sanitary conditions would be even greater. Wetherbee attributed the reduction of mortality from typhoid in Portland to the introduction of absolutely pure water from the perpetual snows of Mt. Hood. From this standpoint alone much money is saved to the local life insurance companies.

DISCUSSION.

Dr. Denslow Lewis thought the amount of attention given by the public sanitarians not commensurate with the importance of the subject. He agreed with Dr. Wetherbee in his remarks concerning typhoid.

Dr. John S. Lankford, San Antonio, directed attention to the importance of educating the school children in matters of health. In San Antonio school children have studied the various stages of development of the mosquito and many have been killed by the children. Hence, malaria has greatly decreased. He believes that if the children are educated in this respect when they become citizens the sanitary conditions will be properly adjusted.

Dr. M. H. Cardwell, Portland, thought the hope of the people was entirely with the young, and that this work should be taken up by educational boards. The subject of ventilation as a preventive of disease should be studied by insurance companies.

Suppurations in the Temporal Bone, and their Practical Relation to Life Insurance.

Dr. John F. Barnhill, Indianapolis, discussed the following phases: 1. What symptoms given by the patient and what pathologic conditions found in the diseased ear should be regarded as sufficiently dangerous to reject the applicant? 2. Under what circumstances as to the condition of the discharging ear may the applicant be considered a safe risk? 3. Under what conditions as to the diseased ear should the applicant's case be postponed, and when after medicinal or surgical treatment may insurance be safely issued? He believes that no just decision as to whether or not any applicant is non-insurable can be made unless there be taken into consideration the symptoms obtainable from the person himself, together with the absolute facts obtained from the most thorough, painstaking and accurate examination of the condition of the middle ear and its accessory cavities. There are many suppurating ears which may continue indefinitely, without serious risk to life. The deep cavities of the middle ear must be thoroughly inspected by an experienced aurist. In the present highly developed state of the otologic science there are but few discharging ears that can not be cured, and the patient, therefore, may become an entirely safe risk in so far as the ear condition is concerned.

CALIFORNIA ACADEMY OF MEDICINE.

Regular Meeting, held June 27, 1905.

The President, Dr. Dudley Tait, in the Chair.

Diaphragmatic Grooves on the Liver.

Dr. R. O. Moody stated that two classes of grooves occur on the liver, those running parallel to the ribs and apparently due to the impression left by the ribs on the liver, occurring most frequently in women who lace, and grooves running in the opposite direction, i. e., parallel to the falciform ligament, and which have been termed diaphragmatic grooves. These grooves are found in about 40 per cent. of bodies coming to autopsy, usually on the upper and anterior surface of the right lobe. They may be simple or multiple, as many as nine being found on one of the cases reported. In form they vary from mere slits to more or less wide furrows, being one to eighteen millimeters deep and one and a half to eleven centimeters long. They occur with greatest frequency in old people, but they may be found even in the fetus, three of the latter class being on record. Among the causes believed to be responsible for these grooves are congenital changes in the diaphragm, constriction of the thorax or abdomen by tight clothing, irregularities on the diaphragm produced by such causes as diaphragmatic pleurisy or local peritonitis and a relatively too rapid growth of the liver for the size of the abdominal cavity, which throws the former into folds.

Dr. George Blumer stated that he had often noticed these folds at autopsy and that they seemed to occur more frequently in women than in men, especially in women who had laced.

Dr. Dudley Tait called attention to the importance of a knowledge of these grooves, because they may be encountered at exploratory operations.

The Relation of Hodgkin's Disease to Lymphosarcoma.

Dr. H. W. Gibbons called attention to the great confusion that has arisen in the literature relative to the nature of certain enlargements of the lymphatic glands. Lymphosarcoma is distinguished from Hodgkin's disease, clinically, by the fact that the growth does not remain confined to the lymphatic tissue, but tends to infiltrate the surrounding tissues. Reed, Longcope, and Simmons have shown that Hodgkin's disease is characterized by a definite microscopic picture, differing from the microscopic pictures of both glandular tuberculosis and lymphosarcoma. Of the nine cases studied by the speaker, all presented the typical microscopic characteristics of Hodgkin's disease, with this important exception, that in every case the capsules of some glands were found to be infiltrated by the new growth. In 5 cases the new growth had broken through the capsule into the surrounding tissue and was enclosed by a new capsule. In two cases, involvement of the muscle, salivary glands, and fascia, had occurred. In the liver, in three cases, the tumor could be observed invading the walls of a vein and passing through them. Gibbons regards Hodgkin's disease as a malignant process rather than as a chronic infection. Yet it is still distinguishable from true lymphosarcoma by the nature of the cells that make up the tumor.

Therapeutics

[It is the aim of this department to aid the general practitioner by giving practical prescriptions and, in brief, methods of treatment for the diseases seen especially in every-day practice. Proper inquiries concerning general formulae and outlines of treatment are answered in these columns.]

Spastic Constipation.

The differential diagnosis between atonic and spastic constipation is often very difficult and sometimes impossible, according to A. Albu of Berlin in *Med. Record.*

Spastic constipation, so he states, is found more frequently the more carefully it is sought for. In the female, at least 25 per cent. of the cases are of this form; and many of the most persistent cases of chronic constipation, refractory to all methods of treatment, are of this type. As the treatment of this form of constipation is diametrically opposite to the atonic form, it is not difficult to see why so many patients with constipation are treated for years without success.

Spastic constipation, according to Dr. Albu. is most frequently found in neurasthenic and hysterical individuals, most often females. They are weak, poorly nourished, somewhat pale and anemic and in the third or fourth decade of life.

A perfect knowledge of the syndrome of the malady, therefore, must be obtained in order to outline an intelligent course of treatment.

As these spasms sometimes develop on the basis of atony, every occasion for exciting them must be avoided. Every irritation of the intestines, and especially massage, which is very effective in the atonic form of constipation, must be avoided. He recommends the use of:

1. Warm or hot sitz baths for from 15 to 20 minutes at a time.

2. The application of hot compresses to the abdomen, which not only lessen the spasm, but relieve the colic.

3. Warm enemas of linseed oil or olive oil, one-quarter liter every evening, given in bed, with the hips elevated, or in the knee-elbow position, and retained over night if possible. The object of this treatment is not to produce bowel movements, but to act as a sedative on the spasm of the intestinal muscle, and should, therefore, remain in contact with it as long as possible.

4. As the best antispasmodic he recommends belladonna or atropin, the former given in the form of suppositories in doses of from three to five grains (.20-.30) two or three times daily.

5. Concerning the diet, the author has found a vegetable diet to be the best; the food must be carefully freed from all shells or other irritating particles. Patients may be allowed to partake of all sorts of wheaten bread, made of fine flour, prunes and cooked fruits, soups and broths. Milk is advisable if it does not constipate.

Alcohol, spices, cabbage, cucumbers, celery, radishes, cheese and similar articles of diet must be avoided.

6. The introduction of solid, hard rubber or wooden bougies into the rectum. These are allowed to remain in position for from 10 to 15 minutes every day. They should be lubricated with oil and introduced for five or ten centimeters.

The author does not recommend long and continual rest in bed, because the primary atony is, in this way, favored. On the other hand, he recommends exercise in the fresh air. A regular fattening cure is recommended only in the debilitated and intensely hysterical patients, and after other treatment has failed.

The large dose of belladonna recommended by the author should be noted.

Diarrhea and Dysentery.

Diarrhea, according to Hare in his *Pract. Ther.*, may be divided into: 1. That form due to catarrh, acute and chronic.

2. That form due to disordered innervation.

3. That due to diseased glands along the course of the gastrointestinal tract.

4. That due to ulceration, causing irritation and bloody stools.

The treatment of the first form, according to this author, consists primarily in the regulation of the diet, which should be chiefly of milk, boiled or predigested, or milk whey. Castor oil or other mild purges, such as magnesium sulphate, should be administered to clear the intestinal tract of fermenting food and mucus. To prevent griping he recommends that a sufficient amount of tincture of opium be added, also twenty to thirty (1.30-2.00) grams of sodium bicarbonate to render the bowel alkaline in reaction. A mustard plaster or other counter-irritant should be applied to the abdomen. If astringent treatment is necessary, he recommends the following combination:

℞.	Argenti nitratis	gr. ii	12
	Ext. hyoscyami	gr. v	30

M. Fiant pil. No. x. Sig.: One pill three times a day.

Or

℞.	Plumbi acetatis		
	Ext. opii, āā	gr. ii	12

M. Fiant pil. No. x. Sig.: One pill three times a day.

If the catarrhal state is persistent, no remedy compares to the ammonium chlorid in doses of grains five (.30) every four hours. It may be combined with licorice and water. If the catarrhal state is exceedingly chronic and obstinate, potassium iodid given in doses of from three to five grains (.20-.30) is of value.

If the discharges still remain profuse and the patient becomes weakened, the following is recommended by this author:

℞.	Acidi sulphurici arom.	ʒiss	6
	Spts. chloroformi	ʒii	8
	Tinct. opii camph.	℥ii	60
	Syr. zingiberis q. s. ad	℥iv	120

M. Sig.: One desertspoonful every four hours.

Or

℞.	Tinct. kino.			
	Tinct. catechu co., āā	℥i	30	
	Misturæ cretæ	℥iii	90	
	Aquæ cinnamomi q. s. ad	℥iv	120	

M. Sig.: Shake well and take one tablespoonful every three hours.

The second form of diarrhea, in which serous and watery purging is present, is that form in which the blood vessels of the intestine are relaxed and leaking, so to speak, and must be contracted, and for this purpose the following is recommended:

℞.	Acidi sulph. arom.	℥ss	15	
	Olei cajuputi	gtt. xl	2	65
	Ext. hematoxyli flu.	ʒii	8	
	Spts. chloroformi	ʒi	4	
	Syr. zingiberis q. s. ad	℥iii	90	

M. Sig.: One teaspoonful in water every two or three hours.

If the attacks are due to hepatic disorder, small doses of calomel should be administered to correct the inactivity of the liver and to clear out the intestinal tract.

The after-treatment consists in carefully regulating the diet, which should be composed of milk and milk foods.

The third class is found chiefly in children whose stools are fetid, green, spinach-like masses of half-digested food, and may be due to deficient glandular secretion. They are often cured by hydrochloric acid and pepsin. Powdered ipecac, grain ¼ to ½ (.015-.03) given three times a day is sometimes very valuable in this form of diarrhea.

The fourth type, dysentery, should be treated according to the cause. The intestinal tract should be cleared by calomel in full doses, unless contraindicated by great weakness of the patient. If the passages are slimy and bloody, 1/200 of a grain of the bichlorid of mercury every hour or two is of value. If much blood is presecent, high rectal injections of the following should be administered:

℞.	Aq. hamamelidis dest.			
	Aquæ, āā	℥ii	60	

M. Sig.: Use as a rectal injection.

Or the following may be used as a rectal enema:

℞.	Sodii boratis			
	Tinct. benzoini, āā	ʒi	4	
	Spts. camphoræ	℥i	30	
	Aquæ	Oii	1000	

M. Sig.: Use as a rectal injection.

If ulcers are present and old, the following is recommended:

℞.	Argenti nitratis	gr. x-xx		65-1.30
	Aquæ destil	Oi	500	

M. Sig.: Use as a rectal injection.

A salt solution may be used to follow the silver solution and to counteract its effect if it should prove too strong. Where mucus and pus are present Hare recommends irrigations of mercuric chlorid, 1/5000, or, if preferred for any reason, boric acid may be substituted in proportion of dram one (4.00) to the pint of water (500).

Tannic acid may also be used in the same manner as an astringent in strength of dram one (4.00) to a pint of water (500).

In the ordinary diarrheas occurring in summer, the following is recommended:

℞.	Acidi sulphurici arom	ʒii	8	
	Tinct. opii	ʒiss	6	
	Tinct. capsici	ʒss	2	
	Tinct. card. co.	ʒvi	24	
	Aq. menth. pip. q. s. ad	℥iv	120	

M. Sig.: One tablespoonful four times a day in water.

When diarrhea is present unaccompanied by pain, the following is serviceable:

℞.	Tinct. opii camphoratæ	℥i	30	
	Bismuthi subgal.	ʒiss	6	
	Syr. zingiberis q. s. ad	℥ii	60	

M. Sig.: Shake the bottle well and take one teaspoonful after each bowel movement.

In cases of diarrhea with vomiting, the following may be employed:

℞.	Bismuthi salicylatis			
	Sodii bicarb., āā	ʒiii	12	
	Liq. morph. hydrochlor. (1 per cent.)	ʒiss	6	
	Infusi calumbæ, q. s. ad	℥iv	120	

M. Sig.: Shake well and take one tablespoonful every four hours until the symptoms are relieved.

Beasley recommends the following combinations, containing hematoxylin, in the treatment of the different forms of diarrhea:

℞.	Cretæ prep.	gr. xv	1	
	Pulv. tragacanthæ	gr. ii		12
	Syr. simplicis			
	Tinct. Warburgii (N. F.), āā	ʒss	2	
	Decoct. hematoxyli (5 per cent.) q. s. ad.	℥i	30	

M. Sig.: At one dose and repeat three times daily.

[Warburg's tincture contains quinin gr. x (65) to the ounce (30), which is composed of aromatics.]

Or the following may be substituted for the foregoing combination:

℞.	Bismuthi salicylatis	gr. x		65
	Mucil. tragacanthæ	ʒii	8	
	Decoct. hematoxyli, q. s. ad	℥i	30	

M. Sig.: At one dose and the amount repeated once every four hours.

℞.	Ext. hematoxyli liq.	ʒss	2	
	Tinct. opii	m. v		30
	Aquæ caryophylli q. s. ad	℥i	30	

M. Sig.: One such dose every four hours in cases of chronic diarrhea.

Or

℞.	Creosoti	m. ii		12
	Ext. hematoxyli liq.	ʒi	4	
	Misturæ cretæ q. s. ad	℥i	30	

M. Sig.: At one dose and repeat every four hours.

Medicolegal

Admissibility of Evidence from Operation After Trial.—The Supreme Court of Kansas says that the case of Bousman vs. City of Stafford was brought to recover damages for injuries received in a fall caused by a defective sidewalk. The jury found against the plaintiff, perhaps as the result of a belief that his injuries were purely imaginary. As alleged by him, they were internal, and of such a character that their existence and origin could at the time of the trial only be shown by his own statements and by the opinions of medical experts. The trial was ended May 27. On June 26, but at the May term of court, the plaintiff filed a motion for a new trial on the ground of newly discovered evidence, the character of which was not stated in the motion. In support of this motion, which was heard at the next term of court, in October, there was introduced an affidavit of a surgeon stating that on August 12 he operated on the plaintiff, opening the abdomen, and found that, as the result of an injury, an intestine had been ruptured and an abscess had formed, from which various complications had ensued. The pertinence and importance of this evidence were not disputed, but the city contended that it was not sufficient to require the granting of a new trial, because it was merely cumulative. The court, however, does not think so. It says that the physicians could only give their opinions as experts on a matter necessarily involved in some doubt. The surgeon told of a plain physical fact, about which there could be no mistake. His evidence was not of the same character as theirs, and was not merely cumulative to any of it. In other words, the court holds that the testimony of a surgeon that, in the progress of an operation involving the opening of the abdomen of a patient, he found an intestine ruptured, is not merely cumulative to that of a physician that on an external examination he concluded that such a rupture probably existed. Nor does the court agree with the objection made to the granting of the motion for a new trial that the court had no right to consider the affidavit of the surgeon, for the reason that it related to a fact that was not known to the plaintiff and could not have been known to any one at the time the motion for a new trial was filed. It holds that, on the hearing of a motion for a new trial on the ground of newly discovered evidence, the inquiry is not limited to matters known to the applicant or within his contemplation when the motion was filed, but may include, as well, any that have been developed since that time. Wherefore, it ordered a new trial.

Practice of Medicine by Corporations.—The Supreme Court of Nebraska says that it was contended in State Electro-Medical Institute vs. State that said corporation had violated Chapter 55 of the Compiled Statutes of Nebraska of 1901, which is "An Act to Establish a State Board of Health, to Regulate the Practice of Medicine," etc. The particular provision which it was claimed had been violated was the one in Section 7: "It shall be unlawful for any person to practice medicine, surgery or obstetrics or any of the branches thereof, in this state, without first having applied for and obtained from the State Board of Health a license so to do." And the Supreme Court holds that, while a corporation is in some sense a person and for many purposes is so considered, yet it is not such a person as can be licensed to practice medicine. This corporation, therefore, not having a license, violated this law, if it practiced medicine, surgery, or obstetrics, or any of the branches thereof, within the meaning of the statute.

The statute, in Section 17, the court goes on to say, attempts to define what is meant by "practicing medicine:" "Any person shall be regarded as practicing medicine, within the meaning of this act, who shall operate or profess to heal or prescribe for or otherwise treat any physical or mental ailment of another." Exception is made of the "administration of ordinary household remedies" and in some other cases. The Supreme Court of Kansas has said: "The practice of medicine may be said to consist in three things: First, in judging the nature, character, and symptoms of the disease; second, in determining the proper remedy for the disease; third, in giving or prescribing the application of the remedy to the disease." Underwood vs. Scott (Kan.), 23 Pac. Rep., 942. There was no necessity of legislation to prohibit corporations, as such, from practicing medicine. It is impossible to conceive of an impersonal entity "judging the nature, character and symptoms of the disease," or "determining the proper remedy," or giving or prescribing the application of the remedy to the disease. Members of the corporation, or persons in its employ, might do these things, but the corporation itself is incapable to do them. The qualification of a medical practitioner is personal to himself. The intention of the law is that one who undertakes to judge the nature of a disease, or to determine the proper remedy therefor, or to apply the remedy, must have certain personal qualifications; and if he does these things without having complied with the law he is subject to its penalties. Making contracts is not practicing medicine. Collecting the compensation therefor is not practicing medicine within the meaning of this statute. No professional qualifications are requisite for doing these things.

In other words, the court holds that qualified and licensed physicians may form a corporation and make contracts for the services of its members and other licensed physicians. Making such contracts and furnishing services of qualified and licensed physicians thereunder is not a violation of said Section 7 forbidding the practice of medicine without a license.

It was urged that no one not himself licensed to practice can be beneficially interested in the practice of medicine, and that it is contrary to public policy, and therefore unlawful, for a person or corporation not competent to practice medicine to be beneficially interested in such practice and to be allowed to receive compensation for the services of one who is qualified. For the discussion of this question the court refers to the companion case of State Electro-Medical Institute vs. Platner, decided the same day, which, however, is "not to be officially reported," but may be found in the advance sheets of 103 Northwestern Reporter, 1079. In this latter case the court says that the construction that no person may profit by or enforce an agreement for the practice of medicine, except he is qualified and licensed for the practice of the profession, would prevent action in the name of any assignee of a physician's claim for his services, whether such assignee might be a corporation, a copartnership, or an individual.

Again, the court says that a hospital which is controlled by a corporation, and which receives patients, and contracts to care for them and to furnish them with medical attendance, does not, by so doing, practice medicine within the meaning of this act. Whether a physician who allowed a corporation to make contracts for his services such as he might not make, or who associated himself with and practiced in pursuance of contracts made by corporations that indulged in conduct that would be unprofessional if done by a physician, might himself be made responsible for these acts of the corporation, and so subject himself to the penalties of this act, it was not necessary in this case to decide. The contract in question was signed by the "Physician in Charge." He woud seem to be as much responsible for this contract, and his own action under it, as if he had executed the contract in his own name. Would the same be true of any physician who, being in the employ of the corporation, should practice medicine pursuant to this contract? The court passes this question also without an answer in this case. If further legislation is necessary to regulate and control the conduct of such corporations, and of physicians connecting themselves with such corporations, the argument, it says, should be addressed to the Legislature. The court can not derive such legislation from any public policy indicated by the provisions of this act.

It was further suggested that one of the grounds for revoking the license of a practicing physician is unprofessional conduct, in the betrayal of professional secrets, and that there is no restriction on a corporation that might obtain such secrets and betray them. The court answers that such secrets are imparted for the purpose of enabling the physician who treats the patient to understand the nature of his disease and to determine the best course of treatment. No self-respecting physician would encourage the curiosity of his clerks or assistants in attempting to discover the secrets of his patients; and if he participated in such conduct, or knowingly consented to its exercise, he might furnish grounds for the revoking of his license. If the patient saw fit to divulge his secrets to the assistants or agents without the knowledge of the physician, he would be supposed by so doing to indicate his willingness that they be published to the world.

Current Medical Literature

American Medicine, Philadelphia.

July 29.

1 *[illegible] as a Little Recognized Source of Gastric Symptoms. D. D. [illegible]
2 * [illegible] Ireland.
3 Meningitis: Its [illegible] and Treatment. S. MacCuen [illegible]
4 *Regional Analg[illegible] of Anorectal Diseases. J. [illegible]
5 *Urethrorectal F[illegible] Pa.
6 Hematoma of [illegible] L. Manasses, Philadelphia.

1. Epigastric Linea Alba Hernia.—The importance of this hernia as a source of gastric symptoms, says Stewart, has received too little attention from physicians. These hernias are small, sometimes barely perceptible to the eye, and in other instances fairly evident on inspection. Symptoms are usually referred to the stomach, whence a diagnosis of some form of gastric disorder, gastritis, gastralgia, and even gastric carcinoma or gallstone may be made by the unwary. The apparent triviality of the protrusion, even if it does not escape recognition, often does not suggest itself to the physician as a likely source of the malady.

2. Phthiriasis.—Knott has made the occurrence of some striking cases of phthiriasis in his practice the nucleus of an extremely interesting and exhaustive account of the various aspects of this condition. This disease (morbus pediculosus vel pedicularis) has figured more largely than probably most readers are aware, not only in clinical history, dermatology and pathology, but in general phrase and fable, in political history, in imperial and ecclesiastical biography, in orthodox theology, and in the endless mazes of heathen mythology. Knott's paper contains the principal available items from all these sources of information—and imagination, and offers interesting as well as instructive reading. Some of the pedicular lore is certainly very fantastic, and throws a strange light on some of the byways of human thought. In his concluding sentence he offers "the opinion that the scientist who succeeds in plucking out the heart of the mystery of the triplex 'natural selection' topographically displayed in the life history of human pediculi will have done more toward establishing a true theory

of parasitic and infectious disease than has hitherto been reached by bacteriologic pathology." This statement of opinion implies that the writer is not satisfied with the "germ theory" as understood at present.

4. See article by Pennington in THE JOURNAL, April 8, 1905, p. 1093.

5. See abstract in THE JOURNAL, July 8, 1905, page 128.

Medical Record, New York.

July 29.

7 *Clinical Suggestions from the Study of 500 Cases of Pulmonary Tuberculosis. H. P. Loomis, New York.
8 *Suggestions for Reducing the Prevalence of Summer Diarrhea in Infants. T. S. Southworth, New York.
9 *History and Basis of Dietetic Methods in Typhoid. J. B. Nichols, Washington, D. C.
10 *Animal Remedial Preparations. J. W. Wainwright, New York.
11 *Hypodermic Use of the Salicylate of Mercury in the Treatment of Syphilis. E. F. Kilbane, New York.
12 Carcinoma of the Male Breast Cured by the Roentgen Ray. S. Tousey, New York.
13 Presentation of a Portrait of Dr. Andrew Heermance Smith. G. L. Peabody, New York.

7. Pulmonary Tuberculosis; Clinical Suggestions.—Loomis presents the results of careful clinical study of 500 cases of pulmonary tuberculosis which illustrate the disease in all its phases as occurring in every walk of life. In 80 per cent. of 100 selected cases the first presumable evidence of the disease was as follows: In 48 per cent. the first symptom of any pulmonary trouble was a cough which ran for weeks or months. In 20 per cent. of these cases the cough was not accompanied by any expectoration. In 18 per cent. the first evidence of disease was loss of flesh, associated with a general "run down" condition. Sixteen per cent. of the cases gave a definite history of having had at some time one or more attacks of pleurisy, from which they recovered, and which were followed by periods of perfect health. The average length of time which elapsed between the first attack of pleurisy and the actual development of the disease was three and a half years. In the first two groups the average time the condition lasted before the disease developed was five and one-half months. In the remaining 20 per cent. of cases the pulmonary condition followed grippe, malaria, pneumonia, enlarged lymph glands, and hemoptysis. Loomis is convinced that the great majority of patients who apparently develop pulmonary tuberculosis after 30 years of age have had an attack of the disease before; often so slight that it was overlooked, or they recovered so rapidly, owing to climatic advantages, that they questioned whether they ever had it, and unless a very careful history is obtained, the fact is never mentioned, or is overlooked, and the condition for which they come under observation is believed to be the beginning of their pulmonary trouble. Among the features of value in making a prognosis are the general vitality of the patient, his personal and family history; age (between 25 and 30 being especially favorable); character, intelligence, and disposition of the patient; condition of the digestive functions. Whether one lung or more than one is involved does not seem to be a very important element in prognosis. Fever, hemorrhages, expectoration and tubercle bacilli in the sputum are of little value in prognosis. An analysis of 55 "cured" sanatorium cases showed that the average age was high—29, and that the long-lived ancestry of the patient was of special importance; whereas a tuberculous family history was of less importance. The average length of life among the tuberculous poor, with no advantages of rest or good food, is a little under two years.

8. Suggestion for Reducing Summer Diarrhea in Infants.—Southworth says that suitable prophylactic measures should date from the birth of the child, and one of the most important is breast nursing. If the secretion of milk be scanty, it should be used for part of the feedings at least, and every effort should be made to encourage the flow. Errors in weaning, neglect of apparently mild attacks of diarrhea, and the common diagnosis of teething used as an excuse for any evidence of illness are factors that must be combated. Only through personal, painstaking instruction of the masses can the desired end be accomplished.

9. Feeding in Typhoid.—Nichols urges that typhoid patients should be given a more varied and more abundant diet than is now customary. He takes the ground that the adoption of milk as the chief article of food for such patients has no logical justification. While it is a complete food for infants, it is not adapted for the exclusive nourishment of adults, except in amounts that are practically prohibitive. The present method of feeding in typhoid has developed in a way that seems largely empirical, and the history of the dietetic treatment of fevers, which is reviewed in full by Nichols, shows a progressive advance from a starvation regimen in the direction of a more and more liberal diet.

10. Animal Remedial Preparations.—Wainwright contributes an exhaustive paper on the various glandular and other animal extracts which have lately come into use in therapeutics.

11. Hypodermic Use of Salicylate of Mercury in Syphilis.—Kilbane recommends this treatment for trial in every case of syphilis in which the administration of mercury is indicated for a long period of time.

Medical News, New York.

July 29.

14 *Bacterial Content of the Railway Coach. J. J. Kinyoun, Glenolden, Pa.
14½ *Cure of Leprosy. I. Dyer, New Orleans, La.
15 Primary Sarcoma of the Stomach. M. Manges, New York.
16 Cystic Kidney and Liver. H. A. Reque, Chicago, Ill.
17 *Comparison of Methods of Lavage with the Siphon Tube and Politzer Bulbs. J. P. Sawyer, Cleveland, Ohio.

14. Bacterial Content of Railway Coaches.—Kinyoun details the experiments conducted by him for the purpose of determining the bacteriology of railway coaches. The only fact which seems to have been proved in this investigation was that 73 per cent. of the animals inoculated with material taken from the coaches gave only negative results, thus demonstrating that the bacterial content of the railway coach, in the majority of instances examined, was not infectious to animals.

14½. Cure of Leprosy.—Dyer believes that leprosy is curable in the same sense that syphilis and tuberculosis are curable. No patient treated by him has failed to respond to the treatment; amelioration occurs invariably, and when treatment has commenced early enough and has been kept up long enough a certain number of patients have recovered. The only remedies giving results were strychnin, antivenomous serum, chaulmoogra oil, and chlorate of potash. He believes that the oil more nearly approximates a specific for leprosy than any treatment as yet suggested. Full diet, restricting only indigestible foods, is indicated. The disease seems in no wise to be affected by fish or any other particular article of diet. Baths are essential in the treatment. Hot baths twice a day, with or without soda, are effective. The patient needs tonics and febrifuges, and should be watched for intercurrent or complicating diseases, such as malarial infection, pleurisy, pneumonia, grippe, and the like. Strychnin is a *sine qua non* in the treatment of leprosy. A leper should always take strychnin. When chaulmoogra oil is given, it is better endured before meals than after. It is best taken in capsules, in hot milk, or in milk of magnesia. The dosage should be small at first, say 3 drops, and increased every second or third day until from 120 to 150 drops of the oil are taken at the dose. At times it is advisable to give the oil in pill form. This can be done by combining it with extract of nux vomica and ordinary excipients, or, a very effective way, with tragacanth and common soap. Above all things, individualize the patient. Watch for improvement, and if it does not show in three months wait six months—if it does not show in six months, wait a year, or longer. But keep on driving at the treatment until the patient dies or gets well. Dyer has on record one patient who did not show any signs of improvement for two years, but who is now well. When all evidences of the disease are gone, insist on a continuance of treatment. It may not be necessary, but it makes sure.

17. Lavage with Siphon Tubes and Politzer Bulbs.—Sawyer favors the use of the simple Politzer bulb with the glass connection fitting into bulb and tube. The food residue having been aspirated as completely as possible with an empty bulb, a bulbful of solution, medicated as desired, is introduced slowly into the stomach, and free, active manipulation of the anterior abdominal wall over the region of the stomach is used with sufficient energy, sometimes also shaking the posterior surface of the stomach, especially in conditions of atony or ectasia without ptosis. By this is produced a considerable movement of the liquid within the stomach useful for thorough cleansing and bringing the drug in close contact with the cleansed membrane. Then Sawyer allows the contents to be withdrawn in the aspirator which has been controlled by pressure with the hand till this time, and cleansing of the viscus can be accomplished more thoroughly, in less time, with less fatigue to the patient, than can be accomplished by the use of the siphon tube. That the whole quantity used as a wash is withdrawn is seen by the filling of the bulb. The patient is freed from efforts at expression, and lying as quietly relaxed as possible gains much in comfort. Sawyer draws especial attention to the advantage in lavage of having the patient reclining with loosened clothes, and then making use of free manipulation of the stomach wall to secure a more thorough cleansing and the more thorough application to the mucous membrane of suitable solution chosen for direct medication. In this fashion all the solutions used may be employed with a reasonable certainty that all portions of the stomach membrane are reached in the treatment and that all of the solutions injected are withdrawn.

Boston Medical and Surgical Journal.

July 27.

18 *The Surgeon and the Pathologist. A Plea for Reciprocity as Illustrated by the Consideration of the Classification and Treatment of Benign Tumors of the Breast. J. C. Warren, Boston.
19 *Fractures and Their Treatment. F. J. Cotton, Boston.
20 *Contribution to the Study of Spinal Surgery. G. L. Walton and W. E. Paul, Boston.
21 Duties of the State with Reference to Epileptics. M. Mailhouse, New Haven, Conn.

18. See Journal, July 15, 1905, page 149.

19. **Fractures and Their Treatment.**—Cotton presents a general review of the treatment of fractures and lays special stress on the following points: (a) A better recognition of the advantage of early mobilization will give better functional results. (b) A review of position (with *x*-ray, if possible) should be a routine at a time when correction is still readily possible by open if not by closed methods. (c) Many bad end-results of fractures are remediable by operation; such operations under proper conditions are devoid of any considerable risk, and the field for such corrective operations has increased and is still increasing with greater experience and wider knowledge of the results obtainable.

20. **Spinal Surgery.**—In the first of the two cases reported by Walton and Paul the clinical picture was that of severe pain in the neck and arm, accompanied by local wasting, numbness and loss of power in the arm, and by rigidity of the neck. Operation disclosed a myeloma involving the laminæ and pressing on the dura in the lower cervical region; its removal was followed by relief of pain and rapid improvement of motor and sensory symptoms. In the second case, pain centering in the right arm, accompanied by a modified Brown-Séquard paralysis of gradual onset and rapid progression, led to the diagnosis of tumor pressing on the cord unilaterally in the lower cervical region. Removal of the vertebral arches failed to disclose the tumor, which on autopsy was found to project posteriorly from the anterior wall of the spinal canal at the level of operation. The authors believe in giving the benefit of the doubt to operation in all these cases, for the following reasons: First, there is the bald fact that without interference a hopeless prognosis must be given; second, in ruling out operation, the patient and the family are refused a legitimate attempt to ameliorate discomforts if not to effect a cure; third, if out of many operations, one only is successful, the result, it seems to us, justifies the endeavor; fourth, if selected patients only are operated on, there is great danger that the present limitation of our diagnostic criteria would cause us to overlook the case in which operation would have been most brilliantly successful.

New York Medical Journal.

July 29.

22 Treatment of Pott's Disease and of Rotary Lateral Curvature, by the Plaster-of-Paris Jacket and the Aluminum Corset. (To be continued.) C. Ogilvy, New York.
23 *How to Palpate a Movable Kidney. C. D. Aaron, Detroit, Mich.
24 *Further Contribution to the Study of Pruritus Ani, with Special Reference to Its Local Treatment. L. H. Adler, Philadelphia.
25 *Simulation of Appendicitis by Cholelithiasis. G. G. Lempe, Albany, N. Y.
26 *Case of Lithemic Gangrene, a Contribution to Haig's Uric-Acid Theory. N. Rosewater, Cleveland, Ohio.
27 Suggestions on the Treatment of Morbid Psychic States. W. L. Howard, Baltimore, Md.
28 Case of a Cyst and Hydrocele of Canal of Nuck. B. S. Talmey, New York.
29 Six Lectures on Diseases of the Blood. J. M. Swan, Philadelphia.

23. **How to Palpate a Movable Kidney.**—Aaron says that bimanual palpation is always necessary in palpating a movable kidney. The hand over the lumbar region forces the organ forward, while the hand on the abdomen gently presses toward the hand on the back. It must be remembered that firm pressure is the rule for the hand on the back. To palpate for a movable kidney, he usually places the patient in four different positions: 1. Standing, while manipulator sits on a chair. 2. Standing, while manipulator stands. 3. Lying on back, while manipulator sits on edge of couch. 4. Lying on either side, depending on kidney palpated, while manipulator is sitting.

24. See abstract in Journal, July 8, 1905, page 128.

25. **Simulation of Appendicitis by Cholelithiasis.**—Lempe reports a case of cholelithiasis which previously had been diagnosed as appendicitis and was treated as such.

26. **Lithemic Gangrene.**—Rosewater reports the case of a man, aged 64, emphysematous, rheumatic, suffering with asthma and bronchitis, with a history of superficial gangrene, who was treated for gangrene of the anterior right tibial surface by elevation, antisepsis, heat and a lacto-cereal diet. He was discharged, cured, in six weeks, but was advised to continue the diet. Every indiscretion in eating was followed by some disturbance, such as pruritus and gangrene. On strict observance of the diet he remained well. The author believes that the history of this case, lithemic stigmata, deviation from normal each time uric acid or purin food was added (each time only one incriminating article) and the patient's return to and maintenance of normal health when strictly on the diet is as diagnostic of lithemia and as justifiable as would be potassium iodid and mercury for lues.

Lancet Clinic, Cincinnati.

July 29.

30 Hysteria—A Lecture. P. Zenner, Cincinnati.
31 Early Diagnosis of Cancer of the Body of the Uterus. R. B. Hall, Cincinnati.

Brooklyn Medical Journal, New York.

July.

32 Dr. Homer L. Bartlett; An Address. J. E. Sheppard.
33 The Teaching of Anatomy. W. F. Campbell, Brooklyn, N. Y.
34 *A Freak Case of Appendicitis. L. L. Nichols.
35 Clinical Types of Puerperal Infection. J. O. Polak.
36 Some Cases of Mental Deficiency in Children. Le G. Kerr.
37 Artificial Feeding of Infants. A. D. Smith.

34. **Freak Case of Appendicitis.**—The case reported by Nichols presented the usual symptoms of an attack of appendicitis—the catarrhal variety. Calomel and a saline were ordered, and the patient improved considerably, so that the operation which had been arranged for was postponed. One week after the beginning of the attack, the patient passed a very restless night, complaining of discomfort and tenesmus. In the morning there were several loose stools, one of them containing a very much attenuated appendix about two and a half inches long, with a perforation at the distal end. After his auto-operation, the patient made a rapid and uneventful recovery. Microscopic examination of the tissue showed it to be the appendix, but *it was absolutely necrotic.*

Medicine, Detroit, Mich.

June.

38 *New Method of Obtaining Rectangular Flaps for Transference with a Pedicle. W. W. Babcock, Philadelphia.
39 [illegible] Lateral Sclerosis with Bulbar Symptoms. [illegible]
40 [illegible] C. C. Rogers, Chicago.
41 [illegible] n Colleges and Normal-Schools. E. [illegible]
42 Value of Protargol in the Treatment of Gonorrheal Conjunctivitis. F. C. Hotz, Chicago.
43 Etiology and Pathology of Gastric Ulcer. J. McFarland.

38. **Rectangular Flaps for Transference with Pedicle.**—Babcock's method consists in forming two rectangular flaps, having a width at least one-third wider than the part to be covered, and a combined length about one-third greater than the greatest diameter of surface to be covered. These are formed

in the following manner: A straight incision is made equal to the combined length of the flaps to be raised. Parallel to the first incision and at a distance equal to the width of each flap to be formed, two secondary incisions, one on either side of the original incision, are made. On one side a second incision is placed opposite the upper half of the first incision, while the third incision is made on the other side of the first incision and parallel to its remaining half. By uniting the distal ends of the last two incisions with those of the first, two flaps are formed, which are then raised, leaving two lines of parallel and equidistant wound edges. These are then united in a linear manner, the bases of the flaps being slid by each other until they become exactly opposite. There now remain two linear incisions, at the proximal ends of which are attached the bases of the two flaps with raw surfaces outermost, ready for attachment to the surface to be covered. These surfaces are prepared for grafting in the usual manner, and the limb with the grafts is superimposed on the surface to be covered. The grafts are then fastened to their new position by interrupted or continuous sutures, and the folds at the pedicle of the grafts protected from angulation and pressure by properly applied padding of sterile gauze. At the end of from five to ten days, when the grafts have acquired a sufficient circulation from their new bed, the two pedicles are divided and the limbs separated, leaving a short transverse incision on each limb. It is important that the retentive dressing affords absolute support, so that there be no undue pressure between the opposing surfaces, and that adequate fixation, absolutely preventing any displacement, be provided.

St. Paul Medical Journal.

June.

44 Time as an Element in Abdominal Surgery. M. H. Richardson, Boston.
45 *Subparietal Injuries of the Abdomen. C. J. Holman, Mankato.

45. Subparietal Injuries of Abdomen.—Holmes says that it would seem as though, with a patient, who had received a severe blow in the abdomen, having pain and tenderness on pressure, and with rigidity or spasm of the abdominal muscles, exploration should be advised. If the patient should survive the traumatic peritonitis, there would still be cicatrices and adhesive bands that would require subsequent repair. The degree of violence of the vulnerating body is not necessarily in proportion to the injury produced, because Nature has many means of protecting the abdominal viscera. If the surgeon waits for positive symptoms of hemorrhage and infection, the exploration will be too late and useless. Since the introduction of modern methods in the treatment of shock, i. e., salt solution, hot water, operating tables, etc., speed is not of as great moment as thorough work.

Journal of Cutaneous Diseases, New York.

June.

46 Acrodermatitis Chronica Atrophicans. C. Herxheimer, Frankfort-on-Main, Germany.
47 *Trichorrhexis Nodosa. M. L. Heidingsfeld, Cincinnati.
48 Creeping Eruption. J. B. Shelmire, Dallas, Texas.

47. Thichorrhexis Nodosa.—Heidingsfeld reports one case of this affection. He says that it is universally present in long, uncut hair as a normal condition and is probably Nature's method of physiologically arresting and stunting an otherwise unlimited and eventually cumbersome overgrowth of hair. When present to excess in a predisposed individual, it becomes a pathologic process and abnormally stunts the growth of hair; the nodes are more prominently wounded and are often multiple, separated from each other by uniform intervals of normal hair shaft. Its etiology has been variously attributed to trophic, parasitic and mechanical influences. A mechanical causation is improbable on purely clinical grounds, and it is incapable of artificial demonstration. The condition in brushes can likewise not be attributed to purely mechanical causes. A parasitic causation is not commensurate with the evidence thus far adduced from clinical studies and bacteriologic investigations. The most rational explanation of its etiology from physical, bacteriologic and clinical investigations, and its analogy to kindred and associated changes in the hair rests in trophic influences, emanating from the metabolism at large, and permeating the hair to its ultimate extent.

Bulletin Johns Hopkins Hospital, Baltimore, Md.

July.

49 Contribution to the History of Medicine in Maryland During the Revolution, 1775-1779. W. R. Steiner, Baltimore.
50 Situs Transversus and Atresia of the Pylorus. H. M. Little and H. F. Helmholz, Baltimore.
51 *Case of Congenital Urethral Stricture Associated with Hematuria and Symptoms Suggesting Renal Disease. J. W. Churchman, Baltimore.
52 Synesthesia. H. L. Smith, Baltimore.

51. Congenital Urethral Stricture Suggesting Renal Disease.—The interesting features of the case reported by Churchman can be summarized as follows: The patient presented a urethral stricture in which a positive diagnosis of its congenital nature could be made. Such a diagnosis was warranted by: (a) The history, from which all record of urethral traumatism or of venereal infection was absent. (b) The association of an obvious congenital stricture at the meatus. (c) The complete cure of the clinical manifestations by proper treatment of the stricture. (d) The presence of clear urine and the absence of symptoms after the actual stricture had been dilated. The second point of interest was offered by the clinical symptoms presented. These were nausea and vomiting, hematuria, and pain over the left ureter. They suggested renal or urethral disease, and obscured the diagnosis which was really only cleared up by the therapeutic test. In the third place, this case suggests that another item must be added to our already long list of causes for hematuria, and that congenital stricture may be associated with blood in the urine, the source of which may probably be an hypertrophied verumontanum.

Laryngoscope, St. Louis, Mo.

June.

53 *New Technic for the Submucous Resection of the Cartilaginous Septum—Swivel Septum Knife. W. L. Ballenger, Chicago.
54 Pseudokousma. F. H. Koyle, Hornellsville, N. Y.
55 Acute Mastoiditis, Septic Infection of the Sigmoid Sinus, Phlebitis of the Internal Jugular in a Child; Recovery Without Operation. W. C. Braslin, Brooklyn, N. Y.
56 Surgery of Otitic Brain Abscess. J. F. Barnhill, Indianapolis, Ind.
57 *Passing of the Galvanocautery in the Treatment of Diseases of Nose. W. S. Anderson, Detroit, Mich.
58 Case of Melanotic Sarcoma with Manifestations in the Nose, Nasopharynx, Mouth, Pharynx and Larynx. W. C. Phillips, New York.
58 Unusually Large Fibrous Postnasal Polyp. Wm. W. Carter, New York.
60 Two Interesting Cases, One of Curious Laryngeal Lesion and the Other an Unusual Form of Stammering. G. H. Makuen, Philadelphia.
61 Falsetto or Eunuchoid Voice. H. Dupuy, New Orleans.
62 Case of Melancholia Relieved by Ethmoidal Operation. Wm. B. Shields, St. Louis, Mo.
63 *Safe and Adequate Method for Opening Retropharyngeal Abscesses in Children. E. L. Meierhof, New York.
64 Spontaneous Hemorrhage from an Inflamed Tonsil. G. F. Keiper, Lafayette, Ind.
65 Case of Idiopathic Hemorrhage in the Middle Ear. C. P. Linhart, Columbus, Ohio.
66 Plan to Avoid Heating the Mirror of the Laryngoscope. C. Graef, New York.

53. Submucous Resection of Cartilaginous Septum.—The essential feature of this operation is the instrument used in its performance—the swivel septum knife—devised by Ballenger. The swivel blade of the knife is pivoted to the extremities of the tuning-fork-like prongs of the instrument and swings in a circle. By the resistance of the cartilaginous tissue through which the knife passes, it may be made to cut in any direction in which the distal ends of the prongs are directed. If the prong tips are made to describe a perfect circle, the blade will follow and excise a circular disc of cartilage. The technic of the operation performed by Ballenger is after the Menzel-Hajek method, with the exception of the removal of the cartilage, which is removed in one piece with one cut of the swivel knife. Using a special mucosa knife devised by himself, Ballenger makes a curved incision in the septal mucosa about one inch in length, beginning near the floor of the nose and curving forward and upward as high as possible through the vestibule of the nose and about one-fourth inch posterior to the anterior margin of the cartilage. The incision is made on the left side of the septum, regardless of whether this be the convex or the concave surface, because it is convenient to use the knife with the right hand while the forefinger of the left is inserted into the right nostril. Having made the curvilinear incision through the muco-perichondrium, he resorts to the semi-sharp elevator of Hajek to elevate the anterior portion of the muco-perichondrium from the septum, after which Hajek's blunt elevator should be used. With a bistoury the incision is carried through the cartilage to the perichondrium of the opposite side. The perichondrium is lifted from the cartilage and the prongs of the swivel knife are then introduced through the incision. The instrument is directed backward, parallel with the floor of the nose, until the posterior limit of the cartilage is reached, when it is directed upward and forward, following the outline of the anterior end of the perpendicular plate of the ethmoid to the bridge of the nose, when it is pulled downward, parallel with the bridge of the nose, to the upper extremity of the curvilinear incision. In this way almost the entire septum is removed, except the anterior tip which is to support the tip of the nose. The excised cartilage is removed with a pair of dressing forceps. This method is simple, is devoid of traumatism and shock, can be done in a few seconds, will not result in laceration or perforation of the muco-perichondrium, and the entire cartilage can be removed in one piece, being available for thorough inspection.

57. **Galvano-cautery in Nasal Affections.**—Anderson protests against the use of the galvanocautery as a routine measure in the treatment of nasal diseases. In cases where there is an engorgement of the turbinal, and where under cocain the tissue shrinks to a marked degree, submucous puncture is a simple and efficacious method of treatment. In true hypertrophy, when simple submucous puncture is not sufficient, the flap operation is most satisfactory. The use of the cautery for severing adhesions or false membranes can be discarded and better results obtained by making flaps of tissue to cover the denuded surface, thus preventing the formation of synechiæ. Rather than to cauterize the base of polypi, it is better to curette thoroughly. In cases of hemorrhage from the nose it is better to apply adrenalin, and then to pack the nose carefully with subnitrate of bismuth lint, than to use the cautery. In the treatment of hypersensitive areas in the nose in certain neuroses of nasal origin the cautery has a place, but even here it should be used carefully. The aim should be always to destroy as little mucous membrane as possible, to avoid the formation of adhesions, and the occurrence of ulceration.

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Therapeutic Gazette, Detroit, Mich.

June 15.

67 Use of Diphtherin Antitoxin in the Treatment of Cerebrospinal Meningitis. M. E. Pennington, Philadelphia.
68 *Use of Specific Products of Tubercle Bacilli in the Treatment of Tuberculosis. J. Sawyer, Asheville, N. C.
69 Intestinal Perforation in Typhoid Fever. F. C. Wright, Grove City, Ohio.
70 Cryptogenetic Septicopyemia. J. L. Salinger and G. Walters, Philadelphia.
70½ Treatment of Pneumonia. H. A. Hare, Philadelphia.

68. **Serum Therapy of Tuberculosis.**—Of eleven patients treated by Sawyer with the watery extract of tubercle bacilli for periods varying between 1 and 3 months, more or less marked improvement, local as well as general, was evident in each case, at times to such a degree that the patient believed himself justified in discontinuing the treatment. The degree of such improvement stood in relation to the time of treatment and the dose of the serum. Fourteen other patients, in whom the treatment was completed, made a satisfactory recovery. The tuberculin test was negative in each case after the treatment was stopped. There was no doubt about the diagnosis.

Southern California Practitioner, Los Angeles.

June.

71 Physician and Patient. G. Dock.
72 History of Medicine. J. P. Widney, Los Angeles.
73 *Treatment of Erysipelas by Streptolytic Serum. Wm. Smith, Prescott, Ariz.
74 Test of Public School C[illegible] on [illegible] Memory Tests. G. L. [illegible]
75 Diseases of Women and C[illegible]

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Medical Recorder, Chicago.

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Virginia Medical Semi-Monthly, Richmond.

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85 Relative Value of the Various Methods of [illegible] Sanitary Quality of a Water Supply. E. C. Levy, mond, Va.
86 Injuries to the Brain [illegible] om A Medication. T. D. [illegible]
87 Forcible Removal of F[illegible] istory, tions, and Means. [illegible] a.
88 *Circumcision—Its Imp[illegible] and tion of Certain Reflex Nervous Phenomena. M. H. O' Bullards, Ga.
89 Tuberculosis in Children. St. G. T. Grinnan, Rich
90 *Clinical Significance of the Aspect of the Tongue. Davidson, Augusta, Ga.
91 Result in One Case of Sarcoma of Throat Treated by therapy—After Ten Years. F. T. Chamberlin, Wash D. C.
92 Principles of Surgery. S. McGuire, Richmond, Va.

88. **Circumcision and Nervous Phenomena.**—The O'Daniel's paper is to direct attention to the importance vestigating thoroughly the relationship between phimosis certain nervous disturbances and to urge the importa circumcision in the treatment and prevention of these conditions.

91. **Clinical Significance of Aspect of the Tongue.**—From study of the clinical aspect of the tongue in other disord Davidson concludes that it is an aid to diagnosis, but of consistent value, and that its greatest value as a symptom to indicate the progress in the given disease.

Archives of Ophthalmology, New Rochelle, N. Y.

July.

93 Fibrillary Edema of the Retina Following Contusion. P. Fridenberg, New York.
94 Total Congenital Detachment of the Retina in Two Brothers. J. S. Fernandez, Havana, Cuba.
95 Ocular Muscles Associated with Pain. a, Ga.
96 of the Cornea. P. Silex, Berlin.
97 odoform Poisoning. M. Mohr, Budapest.
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101 Treatment Congenital and Infantile Hydrophthalmus. C. Sch n, St. Johann-Saarbrücken.
102 M cinoma of Iris and Ciliary Body. G. W. Cutler, New

98. Caff Amblyopia.—The special interest in the
case rep be lies in the influence which may be
exercised by field of vision. The conclusions to
be drawn tions are, in the first place, that
amaurosis wi ric contraction of the visual field
persisting for , hemeralopia, and great narrowing
retinal caused by a dose of quinin hitherto
g.) in an apparently healthy per-
stem, whose power of resistance
t nourishment, and, in the second
ein, also in small doses (0.1 g.),
ther contraction of the retinal
field, without either influencing
ption, or causing a permanent
spite of frequent repetition

attention to the possi-
oma and describes
1. The eye shows no
The patient has
of the disease, but
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th 8 American **Urological**
4. Present-day **Status of**
ti E. R. **W. Frank, Berlin.**
pl 5 Constitutional **Aspects of**
York.
a 06 Cytodiagnostic **Examinations**
Joseph **and M. E. Polano,**
t 07 New Model **of the Catheterizing**
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Journal of Medicine and Science, Portland, Me.

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American Practitioner and News, Louisville, Ky.

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122 Wathen, Louisville.
123 O. H. Kelsall.
124 n Zandt.
125 and Treatment. L. G. Bowers, Richmond, Ind.
126 Fissure in Ano. E. O. Witherspoon.

Journal South Carolina Medical Association, Charleston.

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Fort Wayne Journal-Magazine.

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131 Note on Appendicitis. B. Robinson, Chicago.
132 Medicolegal Aspect of Insanity. W. P. Whery, Ft. Wayne, Ind.
133 Prophylaxis and Hygiene of the Exanthematous Diseases. C. A. Woodruff, Ligonier, Ind.

Brooklyn Medical Journal, New York.

June.

134 Cysts of the Breast. W. C. Wood, Brooklyn.
135 Observations on the Diagnosis of Carcinoma Ventriculi. H. G. Webster, Brooklyn.
136 Causes of Femoral Phlebitis. C. H. Goodrich, Brooklyn.
137 Uric Acid Diathesis in Children. R. T. Wheeler, Brooklyn.
138 Vesical Calculus. T. H. Dexter, Brooklyn.
139 Surgical Treatment of Purulent Salpingitis. H. C. Keenan, Brooklyn.
140 Nasal Occlusion in Its Etiologic Relation to General Diseases. A. C. Howe, Brooklyn.

Archives of Physiological Therapy, Boston.

June.

141 Is the Gulf Stream a Climatic Myth? J. K. Crook, New York.
142 Further Experiments with Electrostatic Machines. S. Sheldon, Boston.
143 High Frequency Oscillatory and Pulsatory Discharges. W. J. Jenks, and C. L. Clarke, Boston.
144 Use of Roentgen Rays in the Diagnosis of Foreign Bodies in the Cranium. K. C. Mead, Middletown, Conn.

Medical Age, Detroit, Mich.

June 10.

145 How Tuberculosis Will Be Eventually Eradicated. J. H. Adams, Paoli, Pa.
146 Parenchymatous Keratitis, Iridochoroidal Form with Loss of Both Eyes. C. H. Brobst, Peoria, Ill.
147 Surgical Treatment of Tubercular Spondylitis. A. E. Halstead, Chicago.

Journal of Experimental Medicine, New York.

June.

Relating to the Virulence of Micro-organisms, with Particular Reference to Their Immunizing Power. R. P. trong, Manila.
hod for Preparing a Permanent Nocht's Stain (Nochtner Stain). T. W. Hastings, New York City.
of Intravenous Injections of Bile on Blood Pressure. Meltzer and Wm. Salant, New York.
ses of Liver Tissue Under Normal and Certain Patho-onditions. A. J. Wakeman, New York.
on of a Thermostat Room. N. H. Harris, New York.
Auto-Enzymes of Inflammatory Exudates. E. L. York.

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87 Forcible Removal of Fetus from Uterus: The History, In tions, and Means. M. J. Payne, Staunton, Va.
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102 Metastatic Car Body. G. W. Cutler, New York.

98. **Caffein in Quinin Amblyopia.**—The special interest in the case reported by Schwabe lies in the influence which may be exercised by caffein on the field of vision. The conclusions to be drawn from his observations are, in the first place, that amaurosis with a concentric contraction of the visual field persisting for over a year, hemeralopia, and great narrowing of the retinal arteries can be caused by a dose of quinin hitherto judged to be harmless (1.25 g.) in an apparently healthy person with a relaxed vascular system, whose power of resistance has been reduced by insufficient nourishment, and, in the second place, that in such a person caffein, also in small doses (0.1 g.), can temporarily induce a further contraction of the retinal vessels and of the peripheral field, without either influencing the central vision and color perception, or causing a permanent injury to the peripheral vision in spite of frequent repetition for a year.

99. **Vernal Catarrh.**—Falta directs attention to the possibility of mistaking vernal catarrh for trachoma, and describes ollowing forms of the disease: 1. The eye shows no , except a slight ciliary injection. The patient has photophobia. It is the initial stage of the disease, but lly of brief duration. The diagnosis is very difficult. 2. form the most typical and also the most common, observed degeneration of the tarsal conjunctiva of the d, which presents the appearance of a stone pavement. tiva of the lower lid is catarrhal, or only hyperemic. m is often mistaken for trachoma. 3. About the cornea nish nodules which sometimes cross the margin and the cornea itself. A network of conjunctival vessels is d to each nodule. There is more or less photophobia, ntly hyperemia of the iris with ciliary injection and onally hyperemia of the palpebral conjunctiva. This may be mistaken for phlyctenular keratitis or keratitis ulosa. 4. This form is characterized by flat, broad infilons of colloidal consistence in the ocular conjunctiva with vascular networks attached. It may be confounded with leritis. 5. A mixture of the second and third varieties. 6. ixture of the second and fourth varieties. Although the osis of vernal catarrh is usually easy, a great help in osticating the condition is the fact that if the diseased s rubbed quickly and gently with the upper lid, or if, eversion of the lid, the proliferations on the tarsal surf the conjunctiva are rubbed with a little glass rod, the nt will complain of severe itching. This happens with no disease. In the summer, he sends the patients to a cool tain resort. For those who can not go to such a place he dark glasses and the constant application of cold coms, which render the disease much more endurable during arm months. In addition, every second or third day he the upper lid and massages the conjunctiva with yellow ent on a small glass rod, and then massages the nodules nfiltrates by means of the lid itself.

American Journal of Urology, New York.

June.

3 American Urological Association. R. Guiteras, New York.
4 Present-day Status of Tuberculosis of Male Genital Organs. E. R. W. Frank, Berlin.
5 Constitutional Aspects of Gonorrhea. F. R. Sturgis, New York.
6 Cytodiagnostic Examinations of Gonorrheal Secretions. M. Joseph and M. E. Polano, Berlin.
07 New Model of the Catheterizing Cystoscope. W. Ayres, New York.
108 Prostatic Hypertrophy: Its Surgical Treatment: Conclusions Drawn from Twenty-five Operations. F. Cabot, New York.

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American Practitioner and News, Louisville, Ky.

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122 Emergency Surgery. J. R. Wathen, Louisville.
123 Gynecologic Examination. O. H. Kelsall.
124 Study of Burns. T. K. Van Zandt.
125 Hernia, Its Complications and Treatment. L. G. Bowers, Richmond, Ind.
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131 Note on Appendicitis. B. Robinson, Chicago.
132 Medicolegal Aspect of Insanity. W. P. Whery, Ft. Wayne, Ind.
133 Prophylaxis and Hygiene of the Exanthematous Diseases. C. A. Woodruff, Ligonier, Ind.

Brooklyn Medical Journal, New York.

June.

134 Cysts of the Breast. W. C. Wood, Brooklyn.
135 Observations on the Diagnosis of Carcinoma Ventriculi. H. G. Webster, Brooklyn.
136 Causes of Femoral Phlebitis. C. H. Goodrich, Brooklyn.
137 Uric Acid Diathesis in Children. R. T. Wheeler, Brooklyn.
138 Vesical Calculus. T. H. Dexter, Brooklyn.
139 Surgical Treatment of Purulent Salpingitis. H. C. Keenan, Brooklyn.
140 Nasal Occlusion in Its Etiologic Relation to General Diseases. A. C. Howe, Brooklyn.

Archives of Physiological Therapy, Boston.

June.

141 Is the Gulf Stream a Climatic Myth? J. K. Crook, New York.
142 Further Experiments with Electrostatic Machines. S. Sheldon, Boston.
143 High Frequency Oscillatory and Pulsatory Discharges. W. J. Jenks, and C. L. Clarke, Boston.
144 Use of Roentgen Rays in the Diagnosis of Foreign Bodies in the Cranium. K. C. Mead, Middletown, Conn.

Medical Age, Detroit, Mich.

June 10.

145 How Tuberculosis Will Be Eventually Eradicated. J. H. Adams, Paoli, Pa.
146 Parenchymatous Keratitis, Iridochoroidal Form with Loss of Both Eyes. C. H. Brobst, Peoria, Ill.
147 Surgical Treatment of Tubercular Spondylitis. A. E. Halstead, Chicago.

Journal of Experimental Medicine, New York.

June.

148 Questions Relating to the Virulence of Micro-organisms, with Particular Reference to Their Immunizing Power. R. P. Strong, Manila.
149 Method for Preparing a Permanent Nocht's Stain (Nocht-Jenner Stain). T. W. Hastings, New York City.
150 Effects of Intravenous Injections of Bile on Blood Pressure. S. J. Meltzer and Wm. Salant, New York.
151 Hexon Bases of Liver Tissue Under Normal and Certain Pathologic Conditions. A. J. Wakeman, New York.
152 Construction of a Thermostat Room. N. H. Harris, New York.
153 Enzymes and Auto-Enzymes of Inflammatory Exudates. E. L. Opie, New York.

Journal Michigan State Medical Society, Detroit.

July.

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22. **Clinical Report of Rotunda Hospital.**—Tweedy reports 1887 cases of labor in the hospital, with a mortality of 8.42 per cent. Thirteen women died throughout the year. Premature labor was induced five times. There were 13 cases of accidental hemorrhage, one ending fatally. Nine of these patients required no treatment; in the others, labor had not commenced, and in these, moist aseptic pellets of cotton wool were packed tightly round the cervix and promptly checked the hemorrhage. There were 4 cases of placenta prævia, with one death due to septic infection, which existed when the patient entered the hospital. Bi-polar version was performed in the remaining cases, and in one a living child was born. Twenty-nine cases of postpartum hemorrhage were treated successfully by massage, ergot, hot vaginal douches and plugging the uterus with sterile gauze. Manual removal of the placenta was performed 36 times. In 6 cases postpartum hemorrhage was the indication, while in 31, adherent placenta was present, and in 5, retention was due to spasms of the uterus. Eight patients developed eclampsia—five primipara, two II-para and one III-para. In two the convulsions occurred postpartum, and in two others they occurred both before and after delivery. Macerated children were born in four of the cases. Prolapse of the funis occurred in seven cases, as did also hydramnios. Hyperemesis gravidarum occurred once, a severe case, which was relieved by feeding the patient for three days per rectum and by administering numerous saline enemata. Mania of mild type developed in two cases, both primipara. Symphysiotomy was done once for short internal conjugate. Cesarean section was performed once, both mother and child surviving. Craniotomy was necessitated in the case of a dead child with prolapsed non-pulsating cord. There were 61 cases of abortion and immature delivery. In 31 of these the uterus was emptied of its contents by natural methods. In 6 bi-manual expression sufficed to remove the ovum, while in 12, fingers inserted into the uterus caused complete separation of retained contents, and these were subsequently expressed bi-manually or removed by ovum forceps. In 8 cases, the cervix being narrow, a flushing curette was employed to empty the cavity. In one, replacing a retroflexed uterus and flushing out its cavity caused the ovum to escape. In the remaining two cases the cervix was dilated by Bossi's dilator to extract immature fetuses. Three cases of hydatidiform mole occurred, one of them subsequently developing a chorioepithelioma. Of three cases of hematoma of the vulva, only one necessitated opening the tumor and turning out the clots. There were ten cases of podalic version, 392 cases of lacerated perineum, and 65 forceps cases. Among the infantile conditions were the following: Hydrocephalus, 5 cases; spina bifida, 6 cases; meningocele, 2 cases; imperforate anus, 4 cases; cleft palate, 2 cases; icterus, 9 cases; and anencephalia, 3 cases.

Centralblatt f. Gynäkologie, Leipsic.

Last indexed page 225.

26 (XXIX, No. 25.) Mechanism of Birth. New Pelvimeter.—Zur Mechanik der Geburt. Einzelne Komponenten des [illegible] Die Abhängigkeit d [illegible]
27 *Ra [illegible]
28 (No. 26.) Noch einmal zur Entstehung des Chorioepithelioms und Epithelioma chorioektodermale aus congenitaler Anlage (congenital origin). L. Pick.
29 *Zur Desinfektion der Bauchdecken (of abdominal walls). R. Saniter.
30 Zu [illegible] Uterus (improved curette). K. E.
31 (No. [illegible]) German Congress of Gynecology, Kell, June 13-17. See page 251.
32 *Zur Pubiotomie. O. Bürger (Schauta's clinic, Vienna). Id. O. v. Küttner (St. Petersburg).

27. **Rapid Microscopic Diagnosis.**—Wederhake describes a technic which stains fresh specimens so rapidly that the diagnosis can be made in five minutes from the time the specimen is obtained. It can be used to stain the sediment of urine and other fluids. The technic is extremely simple and practicable, differentiating distinctly almost all kinds of cells, including plasma cells, giant cells, muscle cells, certain cocci and even fat on a larger exposure. If the results are not satisfactory, or to control them, the stain can be washed away with diluted ammonia and any other stain then used. The fresh frozen section is taken up, without rinsing, in tincture of iodin (2 to 5 drops in 20 c.c. of water). The section is then transferred, without rinsing, to a 20 per cent. dilution of a stain made by dissolving crocein scarlet 7 B in 10 c.c. of 700 per cent. alcohol until the alcohol will not dissolve any more. It does not take up much. After from one-half to three or five minutes in the stain, the specimen, still held on the spatula, is rinsed and soaked in water for a minute or two—five minutes would probably dissolve out all the stain. The specimen is then allowed to slide off the spatula into a drop of glycerin on the object glass, when it is ready for the microscope after being covered with a cover glass. If the specimen is already fixed, it has to be soaked for two hours in 40 per cent. formalin, and then rinsed in water for two hours, after which the technic is the same as for fresh specimens.

29. **Disinfection of Abdominal Walls.**—Saniter urges the adoption in Germany of the French method of inverting the umbilicus to disinfect it properly before a laparotomy. The center is seized with small forceps and drawn outward, which smooths out the folds and allows the dirt of decades to be readily washed away.

32. **Extramedian Symphyseotomy.**—Two cases treated by Gigli's lateral section of the pubis are related by Bürger and two more by Küttner, the latter the first in Russia. The subcutaneous technic, without drainage, is proving most satisfactory. The operation is so simple and the results so universally good, that both writers believe that pubiotomy is destined to supplant Cesarean section and to abolish perforation of a living child, and also to take the place of prophylactic version in some cases. The bone should be sawed on the smallest side of the pelvis or nearest the fetal occiput.

Jahrbuch f. Kinderheilkunde, Berlin.

Last indexed page 142.

33 (LX, No. 2.) *Fall von chronischem [illegible] eschwür im [illegible]
34 Thymus-Drü [illegible] den deatl [illegible]
36 *26 Weeks' [illegible] eine selten kleine am Leber [illegible] Beitrag zur Frage nach den [illegible] Oberwarth.
37 Ueber congen. Agenesie einer Lunge. Id.
38 Bericht über 1,150 Fälle von Nervenkrankheiten im Kindesalter (nervous affections in children). Schiffer.

Journal Michigan State Medical Society, Detroit.

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9. Tracheal Injection.—Mendel attempts to show that the manipulations required for tracheal injection can be sufficiently simplified to be performed by any physician and without special training, and that the introduction of non-irritating liquids in the air passages never cause any reflex, coughing. or suffocation. One method, the medial, is as follows: If the tongue be protruded and held outside the mouth, the patient not swallowing, the pharynx forms a funnel in which th only inferior outlet is the glottis, the esophagus being closed, s that a small quantity of liquid projected against the posteric wall of the pharynx runs down into the air passages. T [illegible] ond is called the lateral method. In this method the [illegible] must be projected against the lateral wall of the ph [illegible] with sufficient force to turn round this wall and thus [illegible] the posterior wall, whence it falls into the larynx.

11. Influence of Fruit on Precipitation of Uric [illegible] Jerome concludes that pears, fresh figs, grapes, dat [illegible] oranges may be taken not only with impunity but wi [illegible] tinct advantage by those who suffer from uric acid [illegible] and gravel. The beneficial effect, which will be in proportion to the amount taken, is due essentially, if not entirely, to the lessened acidity of the urine. Marmalade does not raise the precipitability of the uric acid, though in the quantity likely to be taken it fails to produce the opposite effect, probably because the amount of fruit pulp is insufficient for that purpose.

14. Duration of Life After Appearance of Alb [illegible] **c Retinitis.**—Of 23 patients traced by Snell three are [illegible] n to be living. Of these, one a man, aged 36, was first [illegible] in July, 1904; the kidney affection had been previously [illegible] nized. Two were women and both had suffered during [illegible] nancy. One, aged 35, seen in March, 1891, recovered [illegible] partially, but became affected again in the next pregn [illegible] two years later, with resulting blindness. The other wo [illegible] aged 45, seen after the birth of the first child, in January, 1897, made a good recovery. The remaining 20 were ascertained to have died as follows: two at the end of one month, two at 2 months, one after 3 months, two after 4 months, one after 5 months, one after 6 months, two after 9 months, one after 12 months, one after 15 months, one after 22 months, two after 24 months, one after 28 months, two after 32 months, and one after four and a half years. The average duration of life in these cases is 14½ months. Snell concludes that the appearance of changes in the retina is an indication of the systemic havoc wrought by the nephritis, and that it portends a fatal termination, which may occur in a few months, and is rarely delayed longer than two years.

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24 Two Cases of Endometritis, with Remarks on Treatment. R. D. Purefoy.
25 Treatment of Diphtheria. C. H. W. McCullagh.

22. **Clinical Report of Rotunda Hospital.**—Tweedy reports 1887 cases of labor in the hospital, with a mortality of 8.42 per cent. Thirteen women died throughout the year. Premature labor was induced five times. There were 13 cases of accidental hemorrhage, one ending fatally. Nine of these patients required no treatment; in the others, labor had not commenced. and in these, moist aseptic pellets of cotton wool were packed tightly round the cervix and promptly checked the hemorrhage. There were 4 cases of placenta prævia, with one death due to septic infection, which existed when the patient entered the hospital. Bi-polar version was performed in the remaining cases, and in one a living child was born. Twenty-nine cases of postpartum hemorrhage were treated successfully by massage, ergot, hot vaginal douches and plugging the uterus with sterile gauze. Manual removal of the placenta was performed 36 times. In 6 cases postpartum hemorrhage was the indication, while in 31, adherent placenta was present, and in 5, retention was due to spasms of the uterus. Eight patients developed eclampsia—five primipara, two II-para and one III-para. In two the convulsions occurred postpartum, and in two others they occurred both before and after delivery. Macerated children were born in four of the cases. Prolapse of the funis occurred in seven cases, as did also hydramnios. Hyperemesis gravidarum occurred once, a severe case, which was relieved by feeding the patient for three days per rectum and by administering numerous saline enemata. Mania of mild type developed in two cases, both primipara. Symphysiotomy was done once for short internal conjugate. Cesarean section was performed once, both mother and child surviving. Craniotomy was necessitated in the case of a dead child with prolapsed non-pulsating cord. There were 61 cases of abortion and immature delivery. In 31 of these the uterus was emptied of its contents by natural methods. In 6 bi-manual expression sufficed to remove the ovum, while in 12, fingers inserted into the uterus caused complete separation of retained contents, and these were subsequently expressed bi-manually or removed by ovum forceps. In 8 cases, the cervix being narrow, a flushing curette was employed to empty the cavity. In one, replacing a retroflexed uterus and flushing out its cavity caused the ovum to escape. In the remaining two cases the cervix was dilated by Bossi's dilator to extract immature fetuses. Three cases of hydatidiform mole occurred, one of them subsequently developing a chorioepithelioma. Of three cases of hematoma of the vulva, only one necessitated opening the tumor and turning out the clots. There were ten cases of podalic version, 392 cases of lacerated perineum, and 65 forceps cases. Among the infantile conditions were the following: Hydrocephalus, 5 cases; spina bifida, 6 cases; meningocele, 2 cases; imperforate anus, 4 cases; cleft palate, 2 cases; icterus, 9 cases; and anencephalia, 3 cases.

Centralblatt f. Gynäkologie, Leipsic.

Last indexed page 225.

26 (XXIX, No. 25.) Mechanism of Birth. New Pelvimeter.—Zur Mechanik der Geburt. Einzelne Komponenten des Becke [illegible] der Conjugata vera vom unter[illegible] v. Gaszynski (Warsaw).
27 *Rapid [illegible] r mikr. Schnelldiagnose. Wede[illegible]
28 (No. 26.) Noch einmal zur Entstehung des Chorioepithelioms und Epithelioma chorioektodermale aus congenitaler Anlage (congenital origin). L. Pick.
29 *Zur Desinfektion der Bauchdecken (of abdominal walls). R. Saniter.
30 [illegible] rus (improved curette). K. E.
31 [illegible] German Congress of Gynecology, Kiel, June 13-17. See page 251.
32 *Zur Pubiotomie. O. Bürger (Schauta's clinic, Vienna). Id. O. v. Küttner (St. Petersburg).

27. **Rapid Microscopic Diagnosis.**—Wederhake describes a technic which stains fresh specimens so rapidly that the diagnosis can be made in five minutes from the time the specimen is obtained. It can be used to stain the sediment of urine and other fluids. The technic is extremely simple and practicable, differentiating distinctly almost all kinds of cells, including plasma cells, giant cells, muscle cells, certain cocci and even fat on a larger exposure. If the results are not satisfactory, or to control them, the stain can be washed away with diluted ammonia and any other stain then used. The fresh frozen section is taken up, without rinsing, in tincture of iodin (2 to 5 drops in 20 c.c. of water). The section is then transferred, without rinsing, to a 20 per cent. dilution of a stain made by dissolving crocein scarlet 7 B in 10 c.c. of 700 per cent. alcohol until the alcohol will not dissolve any more. It does not take up much. After from one-half to three or five minutes in the stain, the specimen, still held on the spatula, is rinsed and soaked in water for a minute or two—five minutes would probably dissolve out all the stain. The specimen is then allowed to slide off the spatula into a drop of glycerin on the object glass, when it is ready for the microscope after being covered with a cover glass. If the specimen is already fixed, it has to be soaked for two hours in 40 per cent. formalin, and then rinsed in water for two hours, after which the technic is the same as for fresh specimens.

29. **Disinfection of Abdominal Walls.**—Saniter urges the adoption in Germany of the French method of inverting the umbilicus to disinfect it properly before a laparotomy. The center is seized with small forceps and drawn outward, which smooths out the folds and allows the dirt of decades to be readily washed away.

32. **Extramedian Symphyseotomy.**—Two cases treated by Gigli's lateral section of the pubis are related by Bürger and two more by Küttner, the latter the first in Russia. The subcutaneous technic, without drainage, is proving most satisfactory. The operation is so simple and the results so universally good, that both writers believe that pubiotomy is destined to supplant Cesarean section and to abolish perforation of a living child, and also to take the place of prophylactic version in some cases. The bone should be sawed on the smallest side of the pelvis or nearest the fetal occiput.

Jahrbuch f. Kinderheilkunde, Berlin.

Last indexed page 142.

33 (LX, No. 2.) *Fall von chronischem perforierenden Magengeschwür im Kindesalter (gastric ulcer in child). Bechtold.
34 Thymus-Drüse und plötzliche Todesfälle im Kindesalter (sudden death of children). Zander und Keil.
36 *26 Weeks' Fetus Born and Lived.—Ueber eine selten kleine am Leben gebliebene Frühgeburt. Ein Beitrag zur Frage nach dem Eintritt der Lebensfähigkeit. Oberwarth.
37 Ueber congen. Agenesie einer Lunge. Id.
38 Bericht über 1,150 Fälle von Nervenkrankheiten im Kindesalter (nervous affections in children). Schiffer.

39 Zur Serum-Behandlung. Schoen-Ladniевsky.
40 (No. 3.) *Klinische Beobachtungen über die Muskulatur der [illegible]
41 [illegible]e Verwendung bei kranken [illegible] sick infants). Brüning.
42 *[illegible] unter Berücksichtigung des Lymphsystems und der Bakteriologie (gland fever). Trautmann.
43 Bemerkun[illegible] frequent weighing, etc., in care [illegible]
44 Zur Frage [illegible] (12 cases of "wound scarlet [illegible]
45 Zur Diagnose der Persistenz des Ductus arteriosus Botalli. Dressler.

33. **Gastric Ulcer in Child.**—Bechtold's patient was a girl of 5. The gastric ulcer terminated in fatal perforation in about five months.

36. **Twenty-six Weeks' Infant.**—The infant born after twenty-six weeks of gestation weighed about 750 gm. (about 24½ ounces) when one month old and when nearly three months old it weighed 1,120 gm. (about 40½ ounces). It succumbed then to a purulent ear affection. It was fed by the bottle very effectively, and during the first seven hours after birth had been exposed to severe chilling.

40. **Muscular System in Rachitis.**—Hagenbach-Burckhardt regards the relaxation and atrophy of the muscles in rachitis as the primary cause instead of the results of the abnormal movability of the joints. When the muscles are strengthened, the flail joints recover normal functioning.

42. *"Gland Fever."—Trautmann does not regard this disease* as a separate morbid entity as some have affirmed.

Wiener Klinische Wochenschrift.

Last indexed page 362.

46 [illegible] zu den primären Fibro-Myomen der [illegible] of broad ligaments). O. Burkard.
47 [illegible]en Typhus-Bazillen und Cholera- [illegible]
48 Ueber die Aggressin-Immunität gegen den Shiga-Kruseschen Dysenterie-Bazillus. Y. Kikuchi.
49 Zur Frage des Aggressins. C. von Pirquet and B. Schick.
50 (No. 18.) Dural Infusion of Tetanus Antitoxin.—Zur Be[illegible] Wundstarrkrampfes mit "Duralinfusion." [illegible]
51 [illegible]nus Toxin.—Die hämolytische Wir[illegible] L. Detre and J. Sellei.
52 [illegible] Ursachen des Nichtstillens (breast nursing). G. Nigris.
53 Can Iron Be Administered by Inunction?—Ist Eisen auf dem Wege der Inunktionskur dem menschlichen Organismus einverleibbar? H. Goldman.
53½ Ueber die nekrotisierende Wirkung normaler Seren (necrosis-producing action of normal sera). H. Pfeiffer.
54 (Nos. 19-20.) *Rhythmische pulsatorische Kopfbewegungen (das sogenannte Musset Sche Zeichen) bei Morbus Basedowii (rhythmic movements of head). J. Zeitner.
55 *Beitrag zur Aetiologie der Herzmuskelschwache (Myasthenia cordis). H. Favarger.
56 *Pseudo-Appendizitis und Ileocökal Schmerz. G. Singer.
57 Schillers Beziehungen zur Medizin (relations to medicine). M. Neuburger.
58 (No. 20.) *Ueber Radikal-Operationen bei tuberkulöser Koxitis. Mosetig-Moorhof.
59 Zur Narkose-Frage. F. Schopf.
60 Ueber akute primäre Kolitis. D. Kokoris.
61 (No. 21.) Erfahrungen über lumbale Analgesie mit Tropakokain. Phillip.
62 Zur Kasuistik und Therapie der Elephantiasis. H. Kuhn.
63 Ueber das "Aggressin des Tuberkel-Bazillus." O. Bail.
64 (No. 22.) Radiumwirkung von Heilquellen (radioactivity of mineral springs). A. J. Kalmann.
65 Ueber den Fussschlenreflex und das Babinski Phänomen bei 1,000 Kindern der ersten Lebensjahre (plantar reflex and Babinski sign in 1,000 infants). G. Engstler.
66 To Promote Breast Nursing.—Wie können wir das Stillen der Mütter fordern. F. Hamburger.
67 Topische Diagnostik der Mittelhirnerkrankungen (affections of mid-brain). O. Marburg.

54. **Rhythmic Movements of Head in Exophthalmic Goiter.**—The rhythmic movements of the head, known as Musset's sign, which have been observed in cases of aneurism, aortic insufficiency and arteriosclerosis, were noticed by Zeither in 4 cases of exophthalmic goiter.

55. **Myasthenia Cordis.**—In the hearts in 300 cadavers Favarger found fatty degeneration in 52 per cent., cloudy swelling in 41 per cent, and atrophy and heart weakness in 7 per cent. The heart was thus found affected in 300 out of 670 cadavers examined, exclusive of the cases of pronounced valvular defects. This remarkably large proportion of anatomic affections of the myocardium was a surprise to him. Comparing the anatomic findings with the clinical diagnosis, he found that the fatty degeneration had been diagnosed in only 14 per cent., the parenchymatous degeneration in only 7 per cent. and in all the other cases no traces of the heart affection had been detected during life or they had been interpreted erroneously. The diagnoses had been made by trained Viennese clinicians, and the conclusion is inevitable that in a large proportion of cases it is impossible to differentiate it. It is wiser to give up the attempt and to diagnose merely from the most prominent symptoms, the weakness of the heart muscle, myasthenia cordis. The cause of the myasthenia is either of an infectious or of a toxic nature, or due to anemia or to sclerosis. The clinical diagnosis of weakness of the heart muscle on the basis of the morbid process causing it, is sure to be correct, and it also directs attention to the necessity for strengthening the enfeebled heart musculature by rest and tonics.

56. **Pseudo-Appendicitis and Ileocecal Pain.**—Singer has had an extensive experience of cases of illness which simulated appendicitis but were in reality of other origin, and the appendix was found sound: In a certain number of cases, the operation for the supposed appendicitis banished all the symptoms although nothing was found in the appendix to explain them. In some instances it may be possible that slight malformation or displacement of the appendix or adjacent parts might entail disturbance in circulation, causing pain, but spontaneously righting themselves later or corrected by an operation. In other cases, fractional disturbances in the lower intestine simulated the picture of chronic appendicitis, but the spontaneous cure under change of air or hydrotherapy or other general measures cleared up the diagnosis. In other cases neuroses in the sexual sphere induced obstinate spastic contraction in the lower bowel with its train of symptoms, especially pain. When the latter is located in the ileocecal region the widespread dread of appendicitis at once locates the trouble at this point. In one of the cases he describes, McBurney's point was painful; the patient was a woman of 30, the rectum free. Examination revealed severe vaginismus, which was ascribed to masturbation. A course of cold hydrotherapy banished all the symptoms and there has been no sign of appendicitis since. Appendicitis may also be simulated by a kindly affection, as he has had occasion to observe in his practice several times. Intestinal parasites can also cause symptoms suggesting it.

58. **Radical Operation for Tuberculous Hip-Joint Disease.**—In the radical operation for a severe case of tuberculous coxitis Mosetig opens the field extensively by temporary resection of the greater trochanter, not disturbing the attachment of the transverse oblique abdominal muscles. After extirpation of the focus, he fills the resulting cavity with his iodoform filling, in which he implants the end of the femur. The legs are placed parallel and the abscess cavity is drained. The pseudoarthrosis which results is much better, he thinks, than ankylosis. His 4 patients thus treated are able to walk without trouble, merely requiring an insole 2.5 cm. thick. They can sit and stand without difficulty. In one case, a previous shortening of the limb of 3 cm. was half corrected by the operation. This method is applicable for the severer cases while that recommended by Lorenz, described recently in these columns, he thinks should be reserved for the milder cases. The Roentgen pictures show the extremely satisfactory anatomic result obtained.

Münchener medizinische Wochenschrift.

68 (LII, No. 22.) Beginn und Wachstum der Darmk[illegible] (growth of intestinal cancer). Marckwald.
69 *Behandlung der Leukämie mit Röntgen-Strahlen. O. R[illegible]enbach.
70 Origin of Quinquaud's Sign.—Die Entstehung des Qui[illegible]dschen Phänomens. M. Herz.
71 *Local Massage for Hay Fever.—Zur Behandlung der [illegible]eufieber-Konjunktivitis. O. Schwarz.
72 Zur Kasuistik des "hyperkeratotischen" gonorrhoischen Ex[illegible] V. Roth.
73 [illegible]tionen bei Lichen [illegible]ber [illegible]mann.
74 [illegible]s.
75 [illegible] (for determination of [illegible]
76 *[illegible]iniger Bauchorgane (of certain abdominal viscera). Tendeloo. (Commenced in No. 21.)
77 [illegible] zur Behandlung [illegible]
78 [illegible]
79 [illegible] Oxidation of Sugar.—Die katalytisch[illegible] [illegible]ckerverbrennung. H. Schade.
80 [illegible]lly Cramps, After Administration of [illegible]).—Zur Frage der Folgeerscheinungen, [illegible]mpfzustände nach Theophyllingebrauch. Hermann.

81 Hepatikus-Drainage [illegible] tus choledochus [illegible]
82 Serum Behandlung [illegible]
83 2 Cases of Gland [illegible]
84 Apparatus for Man[illegible] jeder Art von E[illegible]
85 Children's Asylums in the Country.—Ueber Landerziehungsheime. G. Klein.
86 Wage-earning for Children.—Kinderarbeit.

69. **Roentgen Treatment of Leukemia.**—Rosenbach regards the sudden suppression of an essential symptom—such as occurs in leukemia when the white cells are reduced in numbers by Roentgen treatment—as a questionable advantage for the organism. The sudden and excessive demands made on it are a serious matter, the same as the rapid rise of the temperature after transient reduction by purely symptomatic treatment of the hyperthemia. He thinks that in leukemia a certain number of the white blood cells—and probably also of the red—are destroyed by Roentgen treatment. Others are attracted to the skin by the local irritation of the rays. These processes alter the composition of the blood to a certain extent, and as the blood is the organ which supplies stimuli for the functional activity of the tissues, the production of leucocytes is inhibited to a certain extent. It is an open question whether the radiation is itself the inhibiting factor or the direct or local action of the rays on the blood, or whether the products of the destruction of the blood cells may not be the determining factor. The inhibiting influence exerted by the rays is probably only a temporary compensation of the actual morbid cause, just as the benefit of purely symptomatic measures to reduce fever is experienced only so long as these measures are kept up. He warns against accepting these temporary effects as removal of the cause. The history of Roentgen treatment of leukemia is passing through the same phases as that of tuberculin treatment of tuberculosis. Instead of the maximal stimulus, the aim now is to use the smallest possible amount, and to treat patients with the smallest possible amount of stimulation.

71. **Local Massage for Hay Fever.**—Urbantschitsch gives an illustrated description of a little electric apparatus with which he massages the mucosa of nose and throat.

76. **Lymphogenic Retrograde Tuberculosis of Certain Abdominal Organs.**—Tendeloo relates a number of cases of tuberculosis of kidneys, suprarenals, sexual organs, liver, spleen and peritoneum in which the location and distribution of the foci conflicted with the assumption of a hematogenic origin. On the other hand, everything harmonized with the assumption of a retrograde lymphogenic origin. The absence of any other tuberculosis foci in the intra-abdominal organs and tissues, while such existed in the lungs or pleura, was another argument in favor of this assumption, as also the finding of dust pigment in the abdominal foci, suggesting that the tubercle bacilli had migrated from some intrathoracic focus by way of the lymphatics. The liver is connected directly with the thorax by the lymphatics, that is, there are no interposed glands, he has found, and he thinks it probable that a similar direct connection exists between the suprarenals or kidneys and the thoracic cavity.

Gazetta degli Ospedali, Milan.

87 (XXVI, No. 46.) Valore della citodiagnosi. A. Rossi.
88 Cura dell' appendicite. G. Santoro.
89 *Immunizzazione per morfina. G. Argentina.
90 (No. 47.) *Eclampsia gravidica e paratiroidina. G. Vassale.
91 (No. 49.) *Sul significato clinico della formula bacillare tubercolare in genere, della streptococciforme in specie. S. Mircoli.
92 Caso di Pseudoleucemia curato coi raggi Roentgen. C. Gennari.
93 (No. 52.) *Sulla interpretazion[illegible] Tubercolosi e dell' eccitamento da [illegible]
94 Le alterazioni secondarie del p[illegible] udative croniche (changes in lungs). [illegible]
95 Tumori del mediastino. E. Clerici.
96 *Importanza degli ascaridi nella chirurgia addominale. N. Soma.
97 (No. 55.) Sull' independenza funzionale ed anatomica dei lobi del fegato (cf liver lobes). T. Silvestri.
98 *Di talune cirrosi epatiche e del loro trattamento. B. Schiassi.
99 *Esiste un serio pericolo nella conservazione di parte della of cervix)? A. Gasparini.
100 (No. 58.) *La pallestesia (sensibility to tuning-fork applied to skin). E. Maragliano.
101 *Nuovo metodo per differenziare il bacillo di Eberth dai bacilli eberthiformi e dai coli. P. Trapani.
102 La corrente alternativa sinusoidale e la corrente pulsante nella cura della malattia di Basedow (electric treatment). G. Severino.
103 *[illegible] of Sublimate in 4 Cases of Scarlet [illegible] ovenose e sottocutanee di sublimato in [illegible] grave. L. M. d'Andrea.
104 [illegible] perniciosa progressiva ed 1 di anemia sintomatica grave. U. Zoppelli.
105 Eclampsia puerperale. O. Betti.

89. **Experimental Immunization to Morphin.**—Argentina experimented on rabbits, finding that very slow, gradual administration of morphin induced more active immunization than when large doses were given in a comparatively short time. The aqueous extract of the brains of animals, in suitable doses, thus treated was able to neutralize the minimal fatal dose of morphin, but less actively than the serum of the animals. Large doses of the brain emulsion proved toxic.

90. **Parathyroid Treatment of Eclampsia and Epilepsy.**—Vassale's previous communications have been summarized in these columns. He relates here that no change was noted in one case of epilepsy under treatment with extract of the parathyroid glands from beef cattle, but in two other epileptics the improvement was most striking. One was a young woman who had had epilepsy from childhood and severe psychic disturbances. No other treatment had been applied for several years. He has noticed that dogs show marked changes in character after extirpation of their parathyroid glands, with hallucinations, depression with constant whining, resembling human melancholia, and states of excitement amounting to actual mania. Such symptoms as these are not observed in any other experimental intoxication. Removal of the thyroid gland does not induce these acute psychic disturbances, but merely a slow and progressive mental torpor as symptoms of myxedema develop. He suggests that parathyroid treatment should be given a trial in mental affections. The benefit that has been noted under thyroid treatment in certain cases of mental affections may possibly have been due to scraps of the parathyroid inadvertently used along with the thyroid, and the cases of failure to the absence of such fragments. He is convinced that the parathyroid theory of the origin of eclampsia harmonizes with the clinical facts observed. Latent functional insufficiency of the parathyroid gland with pregnancy or the puerperium superposed, causes the outbreak of eclampsia; the other causes that have been assumed to be the source of the trouble are merely co-operating factors. The latter may act by the cumulative action of their influences and those of the pregnancy of puerperium and together induce functional insufficiency of the parathyroids or cause definite injury to them. The trouble may likewise be due to congenital defects in one or more of the parathyroids. The last assumption would explain the occurrence of eclampsia in sisters and in cases of myxedema. Special attention should be paid to the parathyroid glands in postmortem examination of women who have succumbed to eclampsia.

91. **The Bacillary Formula in Tuberculosis.**—Mircoli emphasises anew that when bacilli lengthen out it is a sign of diminished virulence. He reviews recent works on the bacillary formula, all confirming his previous assertions on the subject. The streptococcal form of the tubercle bacilli in the sputa, especially if comparatively long, indicates a mild course of the disease, as it is a sign that the organism is opposing a vigorous resistance. Sclerosis will develop or is already developed. The short, thick forms of the bacillus have an opposite significance. Even a large number of the streptococcal shapes in the field is less unfavorable than the finding of even a few of the short, pulpy shapes. When these shapes alternate, the prognosis depends on which seems to be getting the upper hand.

93. **Excess of Blood Corpuscles in Tuberculosis.**—Mircoli thinks that far too little attention has been paid to the hyperglobulia of the tuberculous. It may be the explanation for the so-called "florid" cases of tuberculosis, and also the benefit of small repeated withdrawals of blood in incipient tuberculosis which Sydenham reported. A "florid" aspect with hyperglobulia should not be regarded as against the assumption of tuberculosis in dubious cases. He further calls attention to the fact that injections of tuberculin, previous to an operation, have the power to increase the leucocytosis, and thus enhance the resisting forces of the peritoneum. Isaeff reported several years ago that tuberculin is able to reinforce

the resisting powers of the peritoneum against infection. This is not surprising when we reflect that the active principle of tuberculin is its nucleinic or thymic acid, and that the latter is composed in large part of phosphorus. This explains why tuberculin itself, in certain individuals and circumstances, can exert a stimulating action in the general biologic constitution and on the blood-forming organs in particular. The nucleinic acid present in the tubercle bacillus is a hundred times more toxic than that of its congener, the thymic acid in the thymus. But the fundamental law holds good, and tuberculin, like nucleinic acid, like dead tubercle bacilli, like the semen, the thymus or spleen and like phosphorus, has a true stimulating action on the organism in a given dosage, under certain conditions, and hence on its general immunity and on the formation of blood. A suggestive fact was related not long ago by Arloing. He found that after animals had been inoculated in the spleen with tuberculosis, if splenectomy was performed not long thereafter, the animals died much more rapidly than the other animals with their spleens left in place, although studded thick with tuberculous lesions. The abundance of nucleinic acid in the spleen possibly conferred greater resisting powers on the organism. A tuberculous spleen is frequently associated with enormous excess of blood corpuscles, and this may possibly explain the "florid" cases of unmistakable tuberculosis occasionally observed.

96. **Importance of Helminths in Abdominal Surgery.**—Soma reports a case in which the healing of an abdominal wound was delayed by an ascaris which had worked its way into the wound. D'Alessandro has witnessed four similar cases, in one of which the emergence of the helminth through the wound infected it, with a fatal result. He advises that when the surgeon can palpate helminths through the walls of the intestines he had better remove them when operating for abdominal traumatism, even if it be necessary to make a small incision in the intestine for the purpose. Soma thinks that this would be comparatively useless, and suggests the injection of some worm-killing fluid into the intestine through the open wound. This would render torpid the helminths in the vicinity and further measures for their evacuation could be applied later.

98. **Certain Forms of Cirrhosis of the Liver and their Treatment.**—Schiassi does not accept the classification of liver cirrhosis advocated by Chauffard and others. He recognizes five varieties, based on the anatomic findings, the venous, the arteriovenous, the biliary, the capsular and the mixed. The ascites may be due exclusively to obstruction in the portal circulation or exclusively to the peritonitis, or to both combined. When due exclusively to the portal obstruction, an early operation has every prospect of success. Numerous clinical and experimental data have established the fact that the portal circulation can be effectively restored by anastomosis even when obstruction is complete. When a patient with cirrhosis of the liver and ascites suffers from vague pains in the abdomen, with rise of temperature, right pleural effusion and sensitive liver, and when the ascitic fluid contains a large proportion of albuminoids and has the characters of an exudate, then the indications for surgical intervention should be formulated with extreme care. Tuberculous peritonitis accompanying cirrhosis of the liver may be cured by a laparotomy as also peritonitis from other causes. Parona has reported a case in which he opened the abdomen intending to suture the omentum in a Talma operation. The omentum was missing, and he therefore merely sutured the abdomen after evacuating the fluid. The patient recovered. Similar cases have been reported by others since, and the conclusion seems inevitable that the effusion in these cases is merely the expression of a readily curable inflammation. He adds that the inflammation is curable only when it is a comparatively mild, chronic inflammation. If the inflammation is not in this chronic phase, the operation might easily aggravate it. He is convinced that some of the deaths that have been known to occur soon after laparotomy for peritonitis were due to aggravation of the existing peritonitis. The surgeon should be guided by the rule that laparotomy is indicated at once on the diagnosis of ascites due exclusively to portal obstruction. The omentum should be transplanted and other measures taken according to individual indications. On the other hand, if the ascites be due, either wholly or in part, to inflammation of the peritoneal serosa it is unwise to attempt any surgical interference until the inflammation has passed into the chronic stage. If necessary, the patient can be tapped. The laparotomy should be postponed until four months at least after the appearance of the ascites. During the interval medical measures should be used, milk diet, calomel, possibly iodin subcutaneously, and liver extract or fresh livers might be given to advantage. He has only good results from this organotherapy.

99. **Is there Danger in Leaving Part of the Cervix.**—Gasparini tabulates the details of 51 cases since 1898, in which incomplete hysterectomy was done for various reasons. There were 3 deaths. The mortality after complete hysterectomy is higher than this, as he shows by comparative tables. He adds that no case of carcinomatous or sarcomatous degeneration of the stump occurred in his series.

101. **Differentiation of Typhoid Bacillus.**—Trapani asserted *that the typhoid bacillus behaves differently from the pseudotyphoid and the colon bacillus in the presence of glycerin.* He transfers a platinum loop of the culture to 1 c.c. of distilled water, and keeps the test tube in the thermostat for an hour at 30 C. Ten loops of the contents are then transferred to another test tube containing .5 c.c. of neutral, sterile glycerin. A fresh loop is taken each time to prevent mixture of the fluid with glycerin. The glycerin tubes are left undisturbed in the dark at room temperature for forty-eight hours. Agar plates are then inoculated with the glycerin bacilli. The pseudo-typhoid and colon bacilli proliferate undisturbed while the typhoid bacilli are unable to proliferate after their sojourn in the glycerin.

103. **Intravenous Injections of Corrosive Sublimate in Scarlet Fever.**—D'Andrea relates that there were no deaths in 52 cases of scarlet fever during a recent epidemic, but that the disease then assumed a more malignant form and 6 died out of the next series of 12. Alarmed by this mortality, he treated the next 4 patients by intravenous or subcutaneous *injection of from 2 to 4 mg. of bichlorid of mercury.* All were very severe cases, but recovery ensued in all. The improvement was so marked under this treatment that he has since treated 9 cases of severe typhoid and one of puerperal infection in the same way. He calls attention to the pronounced antithermic action of the bichlorid of mercury when used intravenously or subcutaneously. The temperature drops in from two to six hours.

Books Received

Acknowledgment of all books received will be made in this column and this will be deemed by us a full equivalent to those sending them. A selection from these volumes will be made for review, dictated by their merits, or in the interests of our readers.

SCIENTIFIC REPORTS ON THE INVESTIGATIONS OF THE IMPERIAL CANCER RESEARCH FUND. Under the direction of Royal College of Physicians of London and Royal College of Surgeons of England. E. F. Bashford, M.D. Part I. The Statistical Investigation of Cancer. Part II. The Growth of Cancer Under Natural and Experimental Conditions. Paper. Pp. 58 and 96. Price 2s. 6d. each part. London: Taylor & France, 1905.

FIRST AID IN ILLNESS AND INJURY. Comprised in a Series of Chapters on the Human Machine, Its Structure, Its Implements of Repair and the Accidents and Emergencies to which It is Liable. J. E. Pilcher, M.D., L.H.D., Ninth Edition; 208 illustrations. Leather. Pp. 356. Price, $2.00. New York: Charles Scribner's Sons. 1905.

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Addresses

STATUS OF MEDICAL AFFAIRS IN THE PHILIPPINE ISLANDS.*

JOHN R. McDILL, M.D.
MANILA, P. I.

The account of the first public and scientific meeting of the Philippine Islands Medical Association was read no doubt with considerable interest and some curiosity by many of the 40,000 readers of The Journal of the American Medical Association, with which Association we are affiliated. We introduce ourselves to them and to this community by rendering an account of our environment, who we are, of what has been done in medical channels, and also something of what we hope to accomplish.

History tells why we came to the Philippines, but the good friends at home who have never been here, do not understand why some of us remain.

The American medical men who first came to this archipelago and who laid the foundation of modern research medicine, wore the uniform of the United States army and volunteer surgeon. It is doubtful if one of us thought that here he might make a new home and find new fields of labor. For two years our life was that of the soldier, and medical affairs were the many and arduous duties of the army surgeon in field and garrison. At the end of active military service, those of us who knew anything at all of the art of living to begin with, learned to adapt ourselves to the new physical conditions and the exotic climate and were more than ever constantly impressed with the beauty and resources of the country. We have come to esteem to the utmost the climate which so effectually guards many of you against the too strenuous life and which is almost ideal eight months in the year, even in Manila. Our professional experience has proven that, excepting some intestinal disorders which we are rapidly preventing and curing and a limited amount of epidemic infectious diseases, there is nothing unusual about the kind or amount of disease encountered here, or its successful treatment when hospital care is available. The surgeons' work has fully demonstrated that ideal wound healing and convalescence after operation is as much the rule here as anywhere in the world. We physicians also know and appreciate that the dread diseases of childhood so prevalent at home are rare here and that of all the ills, particularly among women, from real bodily ailments to a poor complexion, for which the climate is invariably blamed, the great majority are hereditary or acquired. were brought here by the patient and often aggravated by careless and unhygienic living. For old people and children the climate is an earthly Elysium.

The complement to the climate is the beauty and charm of the mountainous nature of the islands which invite excursions where, among thrilling scenery and invigorating cold, one finds a hunter's paradise in woods full of deer and wild boar and in marshes teeming with feathered game, which have scarcely ever heard a gun. Those who need or prefer to take vacations abroad can have pleasant voyages among our southern islands or to the nearby and interesting countries of China and Japan, Java and the Straits Settlements, or further to India.

The greatest general interest at present is in the result of the Benguet experiment to alleviate the life of foreign residents. One hundred and thirty miles from Manila is a government reservation in the Benguet Hills, 6,000 feet above sea level, where there is an actual temperate climate and where amid inspiring views one inhales cool, invigorating and exhilarating mountain air, flavored with the breath of Norway pines, where trips on foot or horse can be enjoyed for miles on the plateaus and hills, where in the evening fires are necessary in the houses and three or four blankets essential for a comfortable night. This region is now open to the public by the completion of a colossal piece of road building and can be reached from Manila, when rails are laid, in a few hours. The successful completion of this much discussed and much abused road for the opening up of a summer residence in these hills will have more to do than anything else with solving the problem of how we and our families can exist, perhaps permanently in this tropical climate, outside of our proper racial zone and the peculiar environments, thought to be essential to our well-being and to our proper term of life.

With the improved and constantly improving conditions of living, we believe that almost all will agree that by observing the normal and moral life, healthy Americans can live about as long here and enjoy as good health and do as much good and hard work more than three-fourths of the year as we could in the homeland. And that is enough for anyone. Yet our friends at home persistently pity and commiserate us and wonder what keeps us here, but from now on, at least when we strike our balance between what we had in our former prospects and what we now have and expect in the glowing future, it is surely, remembering the fewness of our working years, a perfectly natural spirit that detains us here to work on in the hope of tilling to the utmost the unscratched fields of this virgin country that beckons the followers of almost every occupation and every profession. In our world of embarrassments we have always the restful feeling that we can rely absolutely on the friendship, power and activity of our home government.

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* President's address, delivered at the second annual session of the Philippine Islands Medical Association, Manila, P. I., March 1, 1905.

SOME INSULAR MEDICAL INSTITUTIONS.

Pride in the achievements of the Insular Board of Health, especially in its last three years' work under inconceivable difficulties, is shared by the medical profession and public alike. So valuable are the healthful conditions its intelligent and scientific labors have helped to create, that other government and commercial measures, no matter how vital or how earnestly attempted, could not have been so fully and successfully carried out. Manila is now a healthful and safe city and when in the near future the extensive public improvements now under way are completed, it will be not only the healthiest and handsomest, but the most prosperous city in the Orient.

Following the establishment of the Board of Health came the Government Laboratories and its scientific libraries, much criticised because of their supposed cost when other institutions were regarded by the public as entitled to precedence. From a scientific standpoint, however, they place the islands second only to Europe, America and Japan, and their economic value has already been inestimable through their work in combating disease in man and animals, in demonstrating the resources of the country and in saving crops from the ravages of pests.

These laboratory facilities, it should be remembered, are freely open to research workers from any part of the world; original investigations of far-reaching importance have already been given to mankind and original research work is constantly going on.

With the coming from the public schools of native candidates for general science and medical courses, these laboratories, with slight alterations, will provide at once the facilities for and teachers of the fundamental branches, or first two years of such courses which are now taught entirely by laboratory methods.

HOSPITALS.

An infectious disease hospital of permanent construction for 100 beds was opened in January, 1904. Temporary arrangements for the care of (75 male and 15 female) insane have just been completed. A venereal detention hospital has been in operation under government care for four years and there is a special hospital for civil employés. The Women's Hospital, founded by Mrs. Whitelaw Reid, after an existence of nearly two years, succumbed in 1902 to opposition, hard times and mismanagement. A leper colony has recently been established on one of the smaller islands, but a general hospital in which the medical profession and the laboratory scientists, with their unlimited facilities, could properly treat and investigate disease among the natives has not yet been established even on a temporary basis.

This country is overrun with untreated chronic diseases and would furnish enormous material for investigation. Full three precious years have been wasted in which work of greatest importance could have been accomplished. Board of Health statistics show that the mortality of infants in the first year is 60 per cent., and that even in Manila 52 per cent. of all deaths occur without medical attendance. Think of what could have been done by the study of 100 cases of infantile disease and 100 cases of dysentery and beriberi with any sort of hospital accommodations by our trained clinicians and investigators long here and yearning for the opportunity.

When a government general hospital does come, may the grave question of management be rightly decided, and may the management remember that in the treatment of disease the evils of ignorance and faith cure cults can be best combated only when medical science is put into close relationship with the highest moral and religious influences.

MEDICAL ORGANIZATIONS IN THE PHILIPPINES.

The history of medical organization since American occupation is brief. During the military times an army medical corps lyceum was established by Colonel Greenleaf and flourished for a few months. In 1901 a general medical organization for the islands was under way, but was discouraged by a request from the Civil Commission that for political reasons the project be abandoned, and it accordingly was.

July 4, 1902, a call to form the Manila Medical Society was signed by ten American and English physicians; organization was effected at once on the basis laid down for local societies by the American Medical Association. The purposes of the society, as stated in the preamble, are "to promote the science and art of medicine, the cultivation of fellowship, exchange of experience, the maintenance of ethical standards, and the promotion in general of the interests of the profession and the welfare of the public."

Monthly meetings are held and the character of the papers, many original, and the attendance and interest shown in the discussions give it a scientific importance that compares favorably with some of the best medical societies at home. It has been a great encouragement and benefit to its members.

At the annual session of the American Medical Association in New Orleans in 1903, a body of over 15,000 physicians, representing several hundred subsidiary societies, the affiliation of the Manila Medical Society was authorized on the basis of a state organization. This was effected in September, 1903, by organizing this association, the Manila Medical Society becoming its first component society, which preserves the integrity of future local or provincial societies. Thus the Manila and any future societies become, through this Philippine Islands Medical Association, the only avenue in this part of the world to membership in the great home body.

The councils of the local and provincial societies, like the houses of delegates of the state and national organizations, are representative bodies of picked men, which deliberate on and carefully dispose of many of the practical medico-social, medicolegal, medico-political and medico-material problems constantly puzzling us as a well-developed unit in the social order of the age. (Simmons.)

THE FILIPINO MEDICAL MAN AND HIS SCHOOLS.

Of greatest interest to us when we found time to make their acquaintance were our Filipino colleagues. We found them courteous and charming in manner, alert and devoted to the interests of their patients, apparently enthusiastic in medical affairs, good students of French and Spanish literature, and liberal purchasers of new instruments and remedies. They have two striking characteristics, an astonishing capacity to absorb and expound theory, and they have occupied an unique social position in that the abler members of the profession have always been foremost among the political leaders of their country.

An interesting feature of medical practice here was the custom, still somewhat in vogue, of charging enormous fees for even ordinary services, sometimes running up into the tens of thousands, and the fact that these delightful fees were often collected was probably due somewhat to the political importance of the profession. Their general education was in the schools of the religious orders, their professional training in the medical department of the University of Santo Tomás and in some instances supplemented by a course of study in Spain or France. Attracted by the personality of the better class of native doctors, earnest overtures have been made to fraternize and interest them in medical society work and making all due allowances for difference in language, customs and education, we are not able to satisfactorily explain the reason of our almost total failure to affiliate them. We are glad to say that a year ago a native and Spanish medico-pharmaceutical society was established and the American Principles of Medical Ethics adopted. We are about resigned to the belief that no close community of professional interests will be possible until the arrival of a new generation of native doctors educated in English and in the modern university schools, where they are actually educated instead of having some information imparted to them.

The existing Spanish institutions that interest us are three, the University of Santo Tomás, its Medical College of San José and the Hospital of San Juan de Dios.

The college of Santo Tomás was founded for the Filipino people in 1612 by the Dominican, Miguel de Benavides, the third archbishop of Manila. It was raised to the status of a university in 1645. From 1785 it has been styled the Royal and Pontifical University of Manila and is the only university authorized to issue diplomas in theology, law, medicine and pharmacy.

Graduates of the several church colleges, whose average age is about sixteen years, are admitted without examination. It has had 118,741 students, less than 3 per cent. of whom, or 3,434, have graduated. It has at at the present time 982 students in all departments.

By royal decree of 1876, reorganizing this university, the departments of medicine and pharmacy were created, with a provision that they be installed in the famous college of San José, which was lost to the Jesuit fathers by their expulsion in 1768. Medical instruction had begun, however, in 1871.

The affiliation of the Medical School of San José with the University of Santo Tomás, which issues the degrees, seems rather nominal as the school is quite autonomous, resembling in this respect the relation of many of our home proprietary medical schools to some universities.

The published list of the medical faculty shows 81 names, and of these about 20 are the active professors and teachers. To date, after 35 years of existence, diplomas have been granted to 10 doctors and to 247 licentiates of medicine. The difference between doctors and licentiates is an extra college year and 100 pésos ($50) more fees. The average age of graduates is 26 years. There is another class, called cirujanos ministrantes, who, after two years' instruction in college and hospital, are licensed to practice medicine only and where no doctor or licentiate is available.

The medical course lasts seven years; the fees for the entire course was 242 pésos ($121). The licentiate pays about 200 pésos for his title, and the doctorate degree costs 350 pésos and one more year's study. The present class numbers 135. The graduating class for 1905 consists of but 5 members.

The teaching, which is didactic and clinical and not graded, is mostly given in the Hospital of San Juan de Dios, founded in 1596 and conducted by the Sisters of St. Vincent of Paul. The hospital has now 27 Sisters, about 200 patients, 8 attending physicians, and 14 of the professors of the Medical College of San José give clinical instruction to medical students.

STATUS OF MEDICAL CONDITIONS AND NEED OF MEDICAL SCHOOLS.

To supply the medical and sanitary needs of this country, 2,000 or 3,000 native physicians and sanitarians should be educated here during the next 20 years.

The population of the islands is about 7,500,000 people, 6,000,000 of whom are said to be Christians. The statistics of the Manila Medical Society show that the total number of licensed physicians is only 360, and 217 of these are in the city of Manila. These figures mean that, although in Manila there is one physician to 1,013 inhabitants, in the provinces the proportion is but one to 51,786, or one physician to each 430 square miles.

In the policy of the government for the general improvement of the Filipinos, perhaps the greatest results are looked for from the Department of Education. With the coming of advanced students in June of next year and the necessity of professional schools for them, it is essential that these schools be established along the lines of the best modern thought, the university plan.

The present status of medical science as defined by Dr. Billings requires and demands a university medical college course. By a university medical college is meant a medical school which is directly connected with and a part of a university, the university fixing the requirements and controlling the admission of students to the medical department. For this ideal and practical scheme of medical education, all the fundamental sciences must be taught entirely by the laboratory method of individual instruction and by teachers who give their whole time to research work in connection with the instruction of students. This plan could be carried out now in the government laboratories, which have the men and facilities to instruct in anatomy, physiology, chemistry, pathology, bacteriology, etc.

The second two years of senior college work should be supplied with facilities of equal rank in clinical medicine, surgery and obstetrics by the endowment of research hospitals in which the instructors devote their entire time and energy to teaching and investigating disease. The cost of these hospitals, if ideally built, equipped and endowed in perpetuity, is stupendous, and in the United States two millions is thought to be about right for each of these hospitals.

No teaching hospitals, however costly, would serve their purpose without an abundance of cases to choose from, but the clinical material available here is practically unlimited. The government has set aside a centrally located site of 23 acres in the city of Manila, ostensibly for hospital purposes, and these two things alone should attract the attention of some man of large means looking for the right opportunity to benefit mankind and assist the Filipino people at the same time.

Untrammeled by traditions of a past or by proprietary medical schools and urged on by the necessity of supplying the country with sanitarians and physicians as fast as possible, a demand that can not be supplied in many years, there is here an unique opportunity for the establishment of the ideal university and affiliated professional schools. There will be no lack of candidates; the Filipinos are bright, earnest, capable students and especially inclined to the study of the learned professions.

This association is, of course, particularly interested in the medical department of a Philippine university, and we find our encouragement in the peculiar preference of the native for our profession; in his alert and inventive mind, coupled with a natural dignity of manner and a certain manual dexterity and accuracy and in the fact that the 140 students in the United States are showing marked aptitude and progress in their studies.

In conformity with the highest purposes of all medical organization, which are the extension of medical knowledge, the advancement of medical science, the elevation of the standard of medical education and the enactment and enforcement of just medical laws, this association, through its permanent Committee on Public Policy and Legislation, petitioned the governor-general in January of this year to appoint, without delay, a board of regents, provisional or otherwise, to report on a plan for the formation of professional schools as part of a university system. This action was taken after consultation with the superintendent of public education, who had already recommended steps looking to the establishment of a university, and who stated to us that by June, 1906, there will be between four and five hundred students who can take some of the branches of a preparatory university course.

It is also confidently believed by the normal school teachers that their schools will be on the plane of the American high school in another two years.

Our greatest hope for the future lies in the education of the people in sanitary matters and the enforcement of laws, and this can only be accomplished by a small army of native sanitarians. Preventive medicine has profited far more than curative medicine by the discoveries of recent years, hence a Philippine medical school should devote its first years to supplying this most pressing need by turning out as many sanitarians as possible. While always standing for the highest practicable requirements, in view of our distressing lack of this class of men, the requirements for admission and graduation should be minimized at the start; to balance this compromise, the first classes graduated can take postgraduate work later in their careers.

Billings estimates the cost of a complete modern medical education to be between $6,000 and $8,000. Keen has shown that the teaching force has increased 110 per cent., against an increase of fees paid by students of less than 100 per cent. It is clear that state aid or private endowment must be had.

Quoting from Dr. Dodson's address, we hear again that at present private beneficence holds out much the larger promise, and in the hope of such assistance there is every reason to feel the greatest encouragement. The recent gifts to medical institutions and for the promotion of research on a princely scale are conclusive evidence that men of affairs and of large capital, whose chief desire is to find a use for their money which shall be of the greatest service to mankind, have come to realize that in these medical channels, especially, large gifts are more likely to yield a certain speedy and bountiful return in good to the world. Since 1900 nearly 300 millions represent the amount of gifts and bequests for all purposes in the United States alone.

One year ago to-day Dr. W. W. Keen[1] made a ringing plea for increased endowments for medical instruction which will soon vitally concern us in what he supposes some would call "far-off, barbarous Manila." The main reason he advanced for generous endowments from the public is the sordid commercial value of the profession to the public. Dr. Keen was not talking of the value of health to anybody or of the desire for the health of those dear to us at home, nor of the kind father that may be lost to a young and dependent family, of the loving mother or of the dear child whose place can never be filled in our hearts or homes, but merely of the profession's value to the community in hard cash, dollars and cents.

The horrors of quarantine of a few years ago, he points out, have been almost abolished by reason of the research work of the medical profession. We no longer fear cholera, the plague, yellow fever or even typhoid fever, because we have killed the rat, we can quarantine or destroy the mosquito, we have barred out the fly and we are boiling and filtering our drinking water. All these things have been shown to be needful and efficient for the prevention of disease by the most patient scientific laboratory work.

A few years ago a single case of cholera or yellow fever in any great port would have meant the loss of millions of dollars to the merchants, but to-day these cases, even of plague, scarcely create a ripple of excitement, because the community knows that our able medical men have these diseases by the throat. Look at the epoch-making work of Dr. Walter Reed and his fellow-workers in Cuba. For the first time in 170 years Cuba has been made free and kept free from yellow fever, and the merchants from New Orleans to New York are reaping the benefit of this unselfish labor in hard dollars on the credit side of their accounts.

The horrible character of plague we scarcely appreciate. In the fourteenth century, twenty-five millions of human beings lost their lives in Europe alone, and even to-day in India, among the ignorant people, over two hundred thousand lives are lost every year from plague. Haffkine's inoculations have diminished the susceptibility of the people by 75 per cent., and the mortality in equal proportions, and the time is coming when the plague, like yellow fever and smallpox, will be practically wiped out.

Again, we must not forget what smallpox was in the past. In the eighteenth century sixty millions died from smallpox in Europe alone, and almost all the living were left with the marks of the disease on their persons. It was as uncommon in the streets of London to see a person not pockmarked, before that memorable day when Jenner inoculated young Phipps in 1796, as it is to-day to see one in New York who is pockmarked. Consider what these millions of saved lives mean in revenue to the state, to the family, in the prevention of pauperism, and the comfort of human beings; then, we must appreciate the value of the services of one man, the most magnificent benefactor of the human race that ever lived, Edward Jenner.

In 1890, Keen estimates that there were 157,000 unnecessary deaths in our large cities. The sanitary reform in 1895 saved in three years a total of 21,300 cases. As there is an average of twenty-eight cases of sickness for every death, sanitary reform in those three years prevented about 600,000 cases of sickness. And who were the reformers? The physicians. The hundreds of millions to be saved in fifty years in one large city alone would enrich the most avaricious of nations.

You all know what has been done in diphtheria in our day, and *it has not been done* by constant and fruitless trials of various supposed means of cure, but it has been done by exact laboratory work by quiet men working far away from the sick room, with not a single human patient under their care, men who are not practitioners of medicine, but pathologists and bacteriologists, experimenting on rabbits, guinea-pigs and mice instead of on men, women and, especially, dear little children, and thus working unobserved and unheralded and unseen they have given to the human race a boon second almost to that of Jenner. The mortality of diphtheria has fallen from 40 to 8.8 per cent., and in laryngeal cases before the serum treatment the mortality was 73 per cent., recoveries 27 per cent., and now precisely the reverse has become the case.

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[1] Address at the dinner to Dr. D. B. St. John Roosa, March 1, 1904, by Dr. W. W. Keen of Philadelphia. While elaborating a similar arrangement the reprint of this stirring address providentially arrived the day before our meeting, and was in part appropriated bodily. It could not be better expressed.

Great epidemics of typhoid have been traced to one case contaminating the water supply of a city, which is preventable.

Malaria was formerly thought to come from marshes and decomposing vegetable matter; now, thanks to the investigations of medical men, you all know perfectly well that if you shut out the mosquito you shut out malaria, as well as yellow fever. When the United States digs the Panama canal, there will be seen a splendid object lesson in sanitation that will carry conviction to all of the money value of medical research in the saving of millions of dollars and thousands of lives.

We are on the verge of an equally beneficent improvement in the treatment of tuberculosis. In Germany the cure of even 10 per cent. adds two millions annually to the resources of the state, and human lives and human happiness can not be reckoned in dollars and cents.

In military hygiene and sanitation the money return is equally profitable. Witness the fearful losses of the British from preventable disease in South Africa, or, worse still, our own losses in the Spanish-American war, where the mortality from wounds was 1 per cent. and that from preventable disease 70 per cent. This could be now characterized as governmental murder through criminal neglect, since the Japanese have practically eliminated disease as a factor in war.

The Japanese determined that their only hope in the war with Russia was that every man who died should die on the field of battle, and in that way neutralize the superiority of two million Russians under insanitary conditions with half a million Japanese protected from disease by a capable medical corps backed up by their government with every authority and facility to prevent disease.

Translate all these facts into figures and the commercial value of modern surgery and of all the medical work done in diseases of animals, and who can tell us the money value of medical research work?

Dr. Pritchett, in McClure's magazine, well says that "The research habit, once thought so far removed from utilitarian ends, is to-day the greatest financial asset of Germany," and we Americans, whether at home or in her possessions, can acquire that "research habit" and teach it to our charges and make it our best and most valuable financial asset, but this takes money.

On account of the complexity and multitude of questions to be solved, such a board as suggested would hardly have a complete outline of plans in two years, and a further reason for its prompt creation lies in the fact that some such definite action is necessary in order to successfully invite private endowment, which must be secured in view of the enormous expense entailed by modern university school methods, particularly in the medical department; further, the appointment of regents would give the department of education the exact impetus it needs at the present time by opening up to its students the vista of higher education.

There is surely a rich man, or better still a rich woman, somewhere who can be found willing to contribute by his or her means to establish a Philippine University Medical School and perhaps temporarily to assist the present school of San José to increased production until it can be absorbed by the university.

The medical profession is but waiting to assist with all its power an earnest and active board to point out to donors the genuine and lasting pleasure that it gives to share in the great and lasting benefits given to humanity by the research workers in medical fields.

THE TEACHING OF PEDIATRICS.

CHAIRMAN'S ADDRESS BEFORE THE SECTION ON DISEASES OF CHILDREN, AT THE FIFTY-SIXTH ANNUAL SESSION OF THE AMERICAN MEDICAL ASSOCIATION, PORTLAND, ORE., JULY 11-14, 1905.

JOHN LOVETT MORSE, A.M., M.D.,
Instructor in Pediatrics, Harvard Medical School; Assistant Physician at the Children's Hospital and at the Infants' Hospital; Visiting Physician at the Floating Hospital.
BOSTON.

Harvard requires for admission to its medical school a degree in arts, literature, philosophy or science from a recognized college or scientific school, except that those who have acquired an equivalent education may be admitted by a special vote of the administrative board in each case. All candidates are required to satisfy the faculty that they have had a sufficient course in theoretical and descriptive (inorganic) chemistry and qualitative analysis or to pass an examination in the same.

The course of study required for the degree of M.D. is of four years' duration. The first three years are devoted to prescribed work and the fourth year entirely to elective courses. A minimum of 1,000 hours' work is required of each fourth-year student. Written examinations are given in the studies of the first three years. In the fourth year the nature of the examination is determined by each department, subject to the approval of the faculty. The whole of the first half of the first year is devoted to anatomy and histology; the whole of the second half to physiology and physiologic and pathologic chemistry. The first half of the second year is given to pathology and bacteriology. The second half of the second year is devoted to elementary medicine and surgery, with lectures on hygiene and pharmacology, and is preliminary to and preparatory for the third year. Two hours a day of this half year are devoted to section work, in which the students are given instruction in physical diagnosis, examination of the blood, urine, gastric contents and so on, in small sections in the hospital clinics.

The third year is devoted largely to medicine and surgery. Pediatrics, neurology, dermatology, obstetrics, gynecology, orthopedics, syphilis, psychiatry, therapeutics, laryngology and otology are also taught more or less in detail. The first two hours of each morning are devoted to clinics and clinical lectures for the whole class, and the second two hours to section teaching. Lectures to the whole class occupy two or three hours of every afternoon.

The present third class consists of about seventy men and is divided into thirty sections of two or three men each. These sections are assigned to work in groups varying from two to ten. This work consists of bedside instruction in the wards or out-patient departments of the various hospitals. Enough instructors are provided so that, if every student is present, no instructor has more than six students; usually he has but three or four. The students in this way receive almost individual instruction. Each exercise lasts from one and one-half to two hours. The exercises are so arranged that, as a rule, every section is busy somewhere. The following extracts from the tabular views of the two terms show much better than any description the arrangement of the section teaching.

The fourth year, beginning with this autumn, is elective. The subjects are divided into courses. Each course equals 125 hours. The student must take 1,000 hours, or eight courses. This is equivalent to one course a month for eight months. Courses are given all day for one month, or half a day for two months. All day means from 9 to 1 and from 2 to 6 every day. Half a day means from 9 to 1 or from 2 to 6 every day. The student must decide on his courses for the year at the beginning of the year. The students are divided among the different months by a special committee of the faculty. Each department decides what the work is to be in its courses. A man may take more than one course in a given subject if he desires, but can not devote the whole year to one subject without the consent of the head of the department. The courses are not graded.

The courses advised by the committee for men who intend to enter general practice include: Medicine, 3 courses; obstetrics, 1 course; surgery, 1 course; pediatrics, 1 course; neurology, dermatology or gynecology, 1 course; otology, hygiene, bacteriology, histology, physiology, chemistry or neuropathology, 1 course.

The elective fourth year enables the student to take a general course of study or to devote a part or all of his time to the subject or subjects in which he is most interested. The future alone can tell how it will work out. In all probability most of the students will select their courses with a view to entering general practice, while only a few will turn at once to the study of a specialty. The personal popularity of the instructors can not fail, however, to influence the students to a certain extent in their choice of courses. On the whole, I think that men who have studied hard for three years after having been through college can be trusted to choose wisely and to make the best of their opportunities.

The department of pediatrics consists of a professor, an assistant professor of contagious diseases, an instructor, a clinical instructor and two assistants. The department practically controls the medical wards of the Children's and the Infants' hospitals, as the nomination of the visiting physicians to these hospitals is in the hands of Harvard University. The visiting physician nominates his subordinates. These hospitals afford a large amount of clinical material for instruction both in the wards and in the out-patient departments. About 700 medical cases are treated annually in the wards of the Children's Hospital and about 200 cases at the Infants' Hospital, while about 3,000 medical cases, making 6,000 visits, come to the out-patient department of the Children's Hospital and about 2,000 cases, making 7,000 visits, to that of the Infants' Hospital. The surgical sides of these hospitals can also be utilized, if desired. The Infants' Hospital wards are limited to babies under 2 years, and the great majority of the out-patient cases are infants, although children as old as 12 years are treated. Both infants and children are treated in both the wards and out-patient department of the Children's Hospital, but the vast majority, especially of the ward cases, are over 2. The present assistant professor of contagious diseases is resident physician at the contagious department of the Boston City Hospital. About 2,000 cases are treated there annually, mostly of diphtheria and scarlet fever, but some of measles and chicken-pox. Smallpox patients are not admitted.

Instruction in pediatrics in the third year is given to the whole class by lectures, clinical lectures, recitations and case teaching, and to sections in the wards. Thirty lectures, 24 clinical lectures, 10 recitations and 10 exercises in case teaching are given. The first lectures are on diphtheria and the exanthemata, preparatory to the section teaching at the hospital for contagious diseases. The theory of infant feeding is then taken up and is followed by 5 practical illustrated lectures on the preparation of modified milk in all its forms. The next lectures are devoted to the diseases of the gastrointestinal tract, and are immediately followed by a series of clinical lectures on these diseases. The topics of the rest of the lectures vary from year to year, but the diseases of nutrition and those of the heart and lungs are almost always taken up. The lectures continue until the first of May. The clinical lectures start at the beginning of the year and continue until April. The recitations begin in February and are designed to cover the more important of the subjects not touched on in the lectures. The case teaching closes the year. In this form of teaching each student is given a typewritten copy of the history and physical examination of an actual case. He is supposed to study this case carefully with his text-books before the exercise, when it is taken up and discussed in detail. The exercise is conducted chiefly by questions, the object being to make the students think for themselves as far as possible. Particular attention is devoted to the details of treatment.

Each section has seven or eight visits at the hospital for contagious diseases and from 20 to 22 at the Children's and Infants' hospitals. At the hospital for contagious diseases the students have the opportunity to become intimately acquainted with the exanthemata and diphtheria. Intubation is at present taught entirely on the cadaver, but it is hoped that in the new elective fourth year it will be possible to teach it on the living as well. At the other hospitals the students see a considerable number and variety of cases. In this section work the time is devoted to the examination and discussion of the cases by the students themselves under the supervision of the instructors, as little time as possible being given to didactic teaching.

In the new elective fourth year the department of pediatrics offers a course each month. A course occupies the whole of each day during the month and counts for 125 hours. A student may take more than one course in pediatrics, if he desires, but can not devote the whole year to it without the consent of the professor of pediatrics. The courses are not graded. The students electing pediatrics are divided among the months by a special committee. The department of pediatrics decides what the work shall be in each course.

The character of the teaching has not yet been entirely decided and must, of course, depend a good deal on the number of students electing the subject and the number to be taught in each month. The general plan, however, is to have the students assist in the work of the hospitals, both in the out-patient departments and in the wards, and to study special cases or groups of cases under the supervision and with the assistance of the instructors in the department. They will be required to do considerable reading in connection with their cases and, if possible, to undertake more or less original investigation. Those who elect but one course can not, of course, go very far in the subject, but those who elect several courses or who devote the whole year to pediatrics will have the opportunity not only of getting a good comprehensive grasp of it, but also of following up special lines of work and of carrying out original researches.

Special courses for graduates have been given in the past throughout the winter months. In the future graduates will be admitted to the fourth year elective courses and the character of this instruction modified as far as possible to suit their individual needs. Summer courses, open to both graduates and undergraduates, are given in each of the summer months. In August and September they are arranged to occupy the whole of every morning. The opportunities for graduate instruction in pediatrics in Boston have not been generally known or appreciated as they should have been in the past. It is hoped that more advantage will be taken of them in the future.

DECEMBER			28	29	30	1	2	3
			Mo.	Tu.	We.	Th.	Fr.	Sa.
SURGERY, Major		M. G. H.	16-20	16-20	16-20			
		B. C. H.	11-15	11-15	11-15			
MEDICINE	Major	M. G. H.	6-10		6-10	16-20		16-20
		B. C. H.		1-5			11-15	
	Minor	M. G. H.	27-30			27-30		27-30
		B. C. H.	21-24			21-24		21-24
		B. D.	25-26			25-26		25-26
		Ho. G. S.						
PEDIATRICS		Children's	1-5	26-30	21-25		16-20	11-15
		So. Dept.				1-3	6-10	1-5
		Infants'				4-6	28-30	7-9

APRIL		27	28	29	30	31	1
		Mo	Tu	We	Th.	Fr	Sa.
SURGERY		17-18	17-18	17-18	17-18	17-18	17-18
MEDICINE	M. G. H.						9-16
	B. C. H.		9-16		9-16	9-16	
PEDIATRICS	Children's	9-13	1-5	9-10 13 15-16			
	Infants'						1-3
LARYNGOLOGY	D. D.		29-30		29-30		29-30
	B. C. H.						
OTOLOGY, E. & E. I.							
SYPHILIS, B. D.				1-8		1-8	
DERMATOLOGY, M. G. H.		1-8			1-8		
GYNAECOLOGY	B. D.						
	B. C. H.		19-20		19-20		19-20

A dash between numbers on both tables includes the corresponding sections.

I have described the teaching of pediatrics at the Harvard Medical School in so much detail for several reasons, one of which is that as I am more familiar with it than with that in other schools I can take advantage of both its merits and defects in discussing the best methods of teaching pediatrics in our schools. Another reason is that, owing to the untiring energy and incessant effort of Dr. T. M. Rotch, the present professor of pediatrics, the department of pediatrics at Harvard has for many years been accorded more nearly the consideration which the importance of the subject deserves than has been granted in other schools. On this account the department has had the opportunity to work out many problems in methods of teaching and by actual experience to arrive at a comparatively high grade of efficiency. The department of pediatrics at Harvard is a department by itself and not a part of or subordinate to any other department. Pediatrics can never be satisfactorily taught unless it is a separate department. If it is made a part of the department of obstetrics or of gynecology, as in some schools, it is certain to be neglected and to be improperly taught. It is too important a subject even to form a part of the department of internal medicine. When it is in that department, as it is in some schools which in other ways are most progressive, it is sure to be insufficiently and imperfectly taught, as it is in them. No man is competent to appreciate how much there is to be known about pediatrics and how little there is known about it, even by the best men in other lines, except the man who makes it a specialty. If the faculties of our medical schools did appreciate these facts there would be an independent department of pediatrics in every medical school. No one who does not make a specialty of pediatrics is, moreover, competent to teach it as it should be taught.

While the time allotted to pediatrics in the third year at Harvard is, of course, entirely inadequate in which to teach the students all that they ought to know about the subject, it is, I think, about all that its relative importance justifies. Pediatrics is recommended, moreover, as one of the fourth year electives for those students who intend to go into general practice and opportunity for further study is also provided in the fourth year. This division of the work between the third and fourth year is, I think, fairly satisfactory when the studies of the fourth year are elective. If the course of study for all four years is prescribed, I feel sure that the greater part of the teaching of pediatrics should be given in the fourth year, when the students have a better knowledge of internal medicine and of physical diagnosis. In the third year, at any rate at the beginning, they are hardly competent to make the most of pediatrics, especially in its clinical aspects. On this account I feel that in schools in which the fourth year is elective the greater part of the clinical teaching of pediatrics in the third year should be given in the second half of the year. The first half of the year could then be devoted to preparatory lectures and to instruction in the anatomy, development, physiology and pathology of infancy and childhood, providing those subjects had not been taken up earlier in the course. In Harvard, at least, the students are taught little or nothing about these subjects at these ages and are consequently not properly prepared to take up the study of pediatrics. I believe that instruction in these subjects should form a part of the regular courses in anatomy, physiology and pathology. If these departments are not prepared to give such instruction, it should then be given under the direction of the department of pediatrics at whatever time these subjects are taught.

It is very difficult to decide as to the relative proportions of the various forms of teaching which will give the best results. Personally, I believe that there is still room for a moderate amount of didactic teaching in the form of lectures and clinical lectures (amphitheater clinics for a whole class). The reading of textbooks can never take the place of lectures, if they are given as they should be given. The right sort of a lecture can paint a picture of disease, bring out the cardinal points and leave an impression on the mind which no textbook can possibly do. Lectures which are merely a monotonous recital of the author's or someone else's textbook are, however, worse than useless. There are also certain cases with gross lesions which are suitable for demonstration in the amphitheater and which, when shown in this way, save an immense amount of time for the study of the far larger class of cases which require closer observation and individual examination. Recitations are, I think, practically useless. The same result is attained, with the additional advantage that the students are made to think for themselves, by the "case teaching" already described. This form of instruction should, I think, replace recitations and possibly a part of the lectures. It is more valuable toward the end than at the beginning of the course. In any case, the bulk of the instruction should be given in the form of section teaching in the hospitals. This is the only way in which pediatrics, or any other medical subject for that matter, can be satisfactorily taught. There can not be too much of it. In this way alone can the student really learn to know diseases and their manifestations and properly prepare himself to treat them intelligently. The most serious obstacle to this form of teaching is the large number of instructors required and the expense entailed thereby. While this is an obstacle which it is at times difficult to overcome, it does not in any way, however, militate against the value of section teaching and consequently must be overcome, whatever the cost.

In conclusion, the teaching of pediatrics, as of other kindred subjects, will never be ideal until the instructors, or at least the heads of departments, devote their entire time and energy to their teaching. They should not be allowed to see private cases except in consultation and then only after they have given a definite amount of time to their teaching and hospital work. Men can not afford to do this, of course, unless they are paid higher salaries than at present. Living salaries can only be paid, however, when the chairs are endowed. We must look to our wealthy and public-spirited citizens to do this.

Remedy for Furuncles.—Dr. A. G. E. Naylor states in the *Australasian Medical Gazette* that he has found compound tincture of benzoin a specific for all kinds of boils. It is applied freely, around and over the boil, within twenty-four hours of its appearance or before suppuration commences.

THE SPECIALTIES IN RELATION TO THE GENERAL PRACTITIONER.

CHAIRMAN'S ADDRESS BEFORE THE SECTION ON LARYNGOLOGY AND OTOLOGY, AT THE FIFTY-SIXTH ANNUAL SESSION OF THE AMERICAN MEDICAL ASSOCIATION, PORTLAND, ORE., JULY 11-14, 1905.

ROBERT CUNNINGHAM MYLES, M.D.,
NEW YORK CITY.

It is my privilege to open the Section on Laryngology and Otology of the American Medical Association—a highly appreciated privilege which you have conferred on me by electing me your chairman, and for which I desire to thank you. It is not only a privilege, but an honor which I have done little to deserve, but I will endeavor to show my appreciation by presenting a few suggestions in the course of the customary chairman's address, which I trust will be accepted in the spirit in which they are given, not only by this section, but by the profession at large.

There never was a truer saying than that "the more we learn, the more we recognize how little we know." If this truism holds good in the general philosophy of life, it is applicable with even greater force to any subdivision of human knowledge, and not with the least degree of emphasis to general and special pathology.

No one can justly pretend that twenty years ago the leaders of the medical profession, the lights of learning, were lamentably deficient in a clear perception of philosophic principles; no one will accuse them of purposely and wilfully thwarting the progress and development of the science to which they had devoted their lives; no one will seriously deny that they have honestly and faithfully endeavored to act in accordance with their best judgment, conviction and enlightenment, to the best advantage of the noble art whose interests had been entrusted to their care. The same may also be truly said of the guardians of medical prerogative of all ages, but I select for purposes of illustration the period of twenty years ago, because it is a time of personal recollection, a time of which we can judge by personal knowledge of the conditions and circumstances under which medical lore was dispensed and practiced. With that knowledge of circumstances and conditions before our mind's eye, let me ask you what position did the medical world of twenty years ago occupy toward those branches of the art which this section has adopted as worthy objects of special cultivation, teaching, care and practice. It was a position of utter indifference, and it mattered not an iota whether or not the medical student of that day had absolved the short and elective course in our specialties—the only one available—in order to stamp him a full-fledged physician. It is no use arguing that the time for specialism was not so ripe then as it is now, because we know that since time immemorial the medical profession has recognized the desirability and necessity of allotting the treatment of special ailments to specialists; but the ear, the nose, and the upper air tract were treated like step-children, and it is only in the enlightened days of a more recent past that we condescended to raise them to the dignity of legitimate members of the pathologic family. There would be neither explanation nor excuse for the attitude of former cycles but for the truism which I cited as the introductory remark of my address, that the more we learn, the more we recognize how little we know.

As our knowledge of nose, ear and throat affections increased, as we found that local pathologic conditions were frequently responsible for constitutional ailments.

and that the latter in turn might produce local manifestations, we delved more deeply into special research work. The advent of the laryngoscope, rhinoscope and otoscope enabled us to carry research work and special treatment to hitherto undreamed of perfection; we learned, learned more, and recognized how little we knew; and that was the signal for the evolution of the specialist in laryngology, rhinology and otology.

Has the course of events justified his creation?

Although we, as members of this section, unhesitatingly and decidedly answer this question in the affirmative, there are reflex considerations which we, as members of the medical profession, would do well to heed.

It is unquestionably true that when a man concentrates his best powers, energy and knowledge, all that is in him, on the study and practice of one particular subject, his work will in all probability excel in this particular the work of another man who studies and practices a dozen different subjects simultaneously. It should never be forgotten, however, that constitutional disturbances may produce local manifestations, and that, however expert an otologist, for instance, may be in the pathology of the ear, he would be a poor physician if he resorted to a local operation for the removal of a symptom which the more broadly trained general practitioner would trace to constitutional causes. In other words, general and special pathology must go hand in hand, a fact which, it seems to me, has not been sufficiently recognized or acted on.

As medical specialism in the course of recent years gradually assumed the well-defined shape in which we see it to-day, the general and special practitioner have drifted more and more apart. Ever since the specialist devoted himself to the exclusive cultivation of one particular field, in which he established himself as the supreme authority, the general practitioner—whether he liked it or not—took a back seat in the treatment of special diseases.

This is a perfectly intelligible and reasonable standpoint, so far as large cities are concerned, and also among those physicians who are so situated that they will spend the rest of their lives in a large city, because in large cities neither patients nor physicians will suffer from the arrangement, there being a sufficient number of general patients to keep the general practitioner alive. and a sufficient number of specialists to care for those cases that require special treatment. The question, however, assumes a totally different aspect in small towns or in country districts remote from large centers, where there are no specialists, and where the general practitioner is expected to evince his prowess in every case—from prescribing a powder for a child to performing Cesarean section; and considering that, after all, there are more small towns than big cities, the importance is apparent of including in the training and education of the medical student a fair sprinkling of specialties.

In the present advanced state of general and special medical knowledge it is of course absolutely out of the question to acquire a thorough knowledge of everything, as this would absorb the best part of a lifetime. All that is essential in the various specialties should unquestionably be included in the up-to-date training of students, and it is one of the tasks of the teachers of special subjects to select just that amount of necessary detail which can be usefully imparted to the students without appreciably adding to the burden of their mental exertions. Students should be made familiar with that borderland where general and special pathology stand on common ground, for after all the same principles of medicine and surgery underlie both. While, for example, they should not be encouraged to perform operations for the removal of adenoids with forceps on account of the delicate technic of manipulation, they can be instructed in the safe handling of the Gottstein curette, in tamponing the naso-pharynx, in using the rhinoscopic, laryngoscopic and head mirrors, the tongue depressor, the nasal speculum, in inspecting the interior of the nose and larynx, and, above all, in differentiating healthy from pathologic conditions. They should be trained to know when it is necessary to remove parts of the turbinates and when not.

The student of general pathology should be shown—not merely told—how hemorrhage after rhinologic operations can be quickly arrested by application of firm pressure, and his attention should be called to the importance of using such pressure without loss of time before considerable hemorrhage has had an opportunity to occur. The method of applying such pressure, or of inserting a posterior tampon skillfully and dexterously, should be practiced on the cadaver and not relegated to didactic lectures. Ocular demonstration in the autopsy room or in the laboratory in the special course of instruction in nose, ear and throat affections, is in many cases far superior to mere oral teaching, although didactic lectures. of course, should also form part of the special training.

One of the great advantages to be derived from the inclusion of details such as these in the general curriculum would be that the general practitioner, when confronted with ear, nose and throat troubles, will be able correctly to diagnose the case and to determine whether it is within his sphere of knowledge and ability to treat the patient himself or whether it is necessary to refer the case to a specialist.

Far be it from me to advocate the creation of what has facetiously been termed a "general specialist," nor is it my desire to see a medical student overcrowded with subjects for which he has no practical use, but necessity demands something akin to a general specialist in the country districts. This would be a mistake which Professor Huxley already characterized as a grave offense at a period when the medical curriculum was not so diversified as it is at the present day. However, I do think that we are permitted to reckon with the "unearned increment" in the learning capacity of each successive generation, which means that the student of today is able to assimilate more knowledge than did his forefathers, partly from the increasing superiority of fundamental knowledge, partly from the improved and more systematic methods of communicating scientific subjects; and, while I strongly advocate the cause of the specialist in laryngology, rhinology and otology, with equal earnestness, I demand that the general practitioner familiarize himself with such necessary and uncomplicated details of our specialties as I have enumerated.

There is another branch of the profession in which a more intimate acquaintance with the latter would be a useful and highly commendable achievement. I refer to the military surgeon and the general army and navy physicians, on whom the well-being of the rank and file of the army and navy depends.

It may be necessary, when respiration is impeded, to perform laryngotomy, an operation which, under modern enlightenment, every surgeon, and especially every military surgeon, should be able satisfactorily to perform. Even the division of the cricoid cartilage may be safely combined with the operation in order to enlarge the opening, when necessary. The surgeon should be familiar with all new devices which have stood the test of practice. Thus, instead of blindly groping for the bullet or other foreign invader of the trachea, if properly trained, he would illuminate the trachea on modern principles, and thus contribute to the accuracy, speed and safety of the operation. His special training should include a knowledge of the fact that it is easier and safer to open the trachea above than below the thyroid gland, as in the former case he is less likely to come into collision with the large blood vessels.

Similarly, the experience gained from Japanese surgical successes on, or rather off the battlefield, may well be taken to heart. The Japanese perform no operation whatever on the firing line, except in cases of extreme emergency when there is imminent danger to life from hemorrhage or from other causes. After taking all the necessary aseptic and antiseptic precautions, they leave all bullet wounds severely alone, remove the wounded to the rear and have the satisfaction of knowing that in the vast majority of cases the wounds heal by first intention, without causing any inflammatory or other pathologic conditions.

Not being connected with the military branch of the profession, I do not wish to encroach on the domain of others more qualified, by stating in detail how my suggestion for securing the services of specialists for the benefit of the rank and file could be best carried out, but there is one possibility of facilitating improvements in the desired direction, to which I would like to call attention. It seems to me perfectly feasible, in our large cities, to have military medical specialists, who could be called in whenever expert treatment at the hands of a specialist is of importance. I refer, for instance, to mastoid operations, in which the success depends entirely on the degree of competence and thoroughness of the surgeon, and in which the differentiation between the acute and chronic stages decides the method of operation.

The principles I have laid down in this address are not supposed to apply in a one-sided way to general practitioners only. They hold good, only in reversed application, for the training of the specialist as well. It is a mistake to assume that once a specialist has acquired a thorough knowledge of ear, nose and throat diseases, and their treatment, there is no need for him to trouble about any of the ills of other parts of the body. As I have already pointed out, the affections of special organs stand in close relation to the general functional activity of the body, and by narrowing his views, thoughts and opinions strictly to the details of his specialty, the specialist will promptly lose the all-important, comprehensive view of cause and effect in the mechanism of the human body. Again, the general condition of the body often determines whether or not a certain operation should be performed, whether local or general anesthesia should be applied, and, in the latter case, the anesthetic and the method of administration. For this and other reasons it is absolutely necessary that the specialist should keep in close touch with his professional brethren who have adopted the practice of general medicine and surgery. Both, the general and special practitioner, should realize that they are not contestants for opposing favors, but friends and comrades in the furtherance of a mutual cause, and, in the interest of suffering mankind, they should work together in harmony toward their common goal.

It requires no seer to foretell that a large amount of needless suffering would be prevented and a great many lives saved, if the suggestions I have thrown out were to meet with general approval and adoption. At the same time, in the present state of professional feeling, I see the possibility of difficulties obstructing our path, but those difficulties can and should be removed, as the interest of our patients is the primary and decisive factor, before which everything else—avarice, ambition, and imaginary ethical considerations—ought to fade into nothingness and vanish like a blinding fog before the rays of the sun. The feeling of fraternity between country physician and city specialist is by no means too hearty, but all good and true men, who have the real interest of our profession at heart, should unite in this movement, and, working hand in hand, further their own interests and raise the ethical level of the profession to a higher and nobler plane.

Means should be found for the whole medical brotherhood to be in closer touch, and a bond of union should be established which will make us all feel akin, whether we are country or city physicians, specialists or general practitioners. On these lines the medical organization of this country should be overhauled. Every member of the profession ought to be imbued with the all-pervading idea that he has not got hold of one exclusive thing, but that he dispenses his knowledge and ability in the services of mankind just like any other of his professional brethren. Broad and liberal views and principles should underlie our every thought and action, and if the arguments I have advanced should pave ever so slightly the way for diffusing the salient features of special training among the vast body of general practitioners, and for inducing the specialist unselfishly to reciprocate the latter's attempt at increasing their usefulness, it will mark the dawn of a perfected, idealized, medical organization, and I shall have the satisfaction of knowing that I have contributed my share toward discharging my obligations as chairman of this special section.

Original Articles

A COMMON GROUND FOR MEDICINE AND DENTISTRY.*

FRANK L. PLATT, D.D.S.
SAN FRANCISCO.

The recognition of dentistry as a specialty of medicine by the American Medical Association and the International Medical Congresses, marks one of the happiest epochs in the history of both professions, for it has opened the way for a mutual understanding of conditions and study of theories beneficial to both, and destined to promote in no small degree the health and happiness of the human race.

The goal of both professions is practically identical, embracing as it does, all honorable means for the relief of suffering and for the cure and prevention of disease.

Within comparatively few years, the medical profession has made giant strides in preventing epidemics of plague, cholera, yellow fever and malaria, and is to-day waging a relentless war, and one which will ultimately be successful, against the greatest of all scourges, tuberculosis.

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* Read in the Section on Stomatology of the American Medical Association, at the Fifty-sixth Annual Session, July, 1905.

Dentistry is no unworthy member of the great medical family, and many of its best and brightest minds are striving with unremitting toil to find means for the prevention of dental disease, and as their efforts are crowned with one success after another they will have but moved further along the common highway traveled by all the healing arts.

The fact that medical science in its various branches is putting forth its latest, and perhaps its greatest, efforts in the direction of the prevention of disease is the very best evidence of the progress and utility of this branch of applied science.

That such effort is demanded and intelligently received by the public furnishes encouragement for renewed effort, and demonstrates the fact that humanity is gradually coming to believe that the prevention of disease is even a greater and more valuable scientific triumph than its alleviation and cure. Admission of the importance and truth of this growing belief leads at once to the consideration of the subject of this paper.

It is an unfortunate fact that the course of instruction in medical colleges, except in a few instances, does not embrace a fairly comprehensive study of dental pathology and hygiene, for they have a direct bearing on other systemic conditions and play a most important part in the health and development of the individual. It would be well also if more particular attention were paid to the diseases of the eye and ear, and the gastric and intestinal disturbances of infancy and later life, as related to diseased conditions of the teeth and oral cavity, in our dental colleges.

The possession of a more general knowledge of these subjects by the practitioners of medicine and dentistry, combined with a greater sense of the obligation of trained minds to impart some of their learning to those dependent on them and less well trained, would accomplish much toward combating disease and bettering the general condition of the human race.

Considering the fact that human beings have inhabited the earth for perhaps fifty thousand years or more, and also that they have been suffering from various conditions of dental disease ever since Adam cut his teeth, it is astonishing how little general knowledge prevails regarding these organs, so essential to the health, development and appearance of mankind. Scarcely one mother in a hundred knows how many teeth there should be in the temporary set, and still fewer know when they should erupt or when they should be lost; and few, few indeed, are the parents who know that the temporary teeth play perhaps a greater part in the development of body and mind than the permanent teeth, and should receive from the day the first one appears, the most painstaking care tending to their preservation.

That expression so common in dental offices, "Why, doctor, that's only a baby tooth, you don't think that ought to be filled?" should be eliminated from the vocabulary of every parent, and there should be heard in its stead, "Doctor, I want my baby's teeth taken care of, every one of them, just as long as he needs them."

How few people we know who have reached maturity without the loss of one or more teeth. It was "only one tooth" neglected until it ached, and then it was extracted. Only one tooth, but its loss eventually disturbed the arrangement and utility of half a set of teeth. This leads to half mastication and half digestion, and whole indigestion.

Parents of all classes, from the dirty and ignorant to the refined and educated, bring their babies two, three or four years of age to the dentist, with their teeth even at these early ages, in all stages of disease. Some have only a few simple cavities, others have scarcely a sound tooth left; with exposed pulps, putrescent pulps, and even a few alveolar abscesses, discharging perhaps a spoonful of pus a day into the oral cavity.

The mother wonders why the baby does not grow, why he does not digest his food, why he does not sleep nights. The wonder of it is that the baby lives at all, and many of them do not live very long, and the cause of death may be traced right back to the septic condition of the oral cavity, back to the mother's ignorance, back to the fact that no one ever told her to care for her baby's teeth, not even the family physician who was present when the child was born, who attended him when ill during the period of dentition, and who should have known, and who should have seen that the mother knew how to keep the little mouth and teeth clean, and should have taught the importance and necessity for doing so. It is undoubtedly a fact, that many of the diseases of childhood, other than those considered incident to dentition, have their origin in diseased conditions of the oral cavity; including of course, dental caries; and it is no less true that throughout life many neurotic and gastric disturbances may be traced directly to the ignorance and neglect of the sufferer in regard to the care and preservation of his teeth. People, as a rule, do not first demand dental services except for the immediate relief of pain; a few, it is true, have learned by previous sad experience that it is well to consult a dentist once or twice a year to have their teeth examined and treated if necessary; and these few, although they do not know it, have reached an unusually high degree of human intelligence. They are well along on the highway of knowledge leading to that remote but beautiful goal when people will understand that it is wiser to employ physicians to keep them well than to cure them when ill. Since we as professional men know these facts, realize their importance and see every day the sad results of ignorance and neglect, since we know that without good digestion there cannot be good assimilation, and without both, good health and good development, since we know that good digestion depends very largely on a proper supply of good, clean food, passed into the alimentary canal through an oral cavity free from septic conditions and provided with the proper organs for its mastication and insalivation, is it not a duty we owe to ourselves and to humanity to impart this knowledge to those who so sadly need it?

This is the duty first of the physician, for his relations with the family are necessarily more intimate and begin at an earlier period than those of the dentist, and second, of the dentist, for by timely advice he may often prevent a repetition of the trouble in regard to which he has been consulted.

It is on this common ground, the instruction of the public in regard to the value, care and preservation of the teeth, and the prevention of disease, that the professions of medicine and dentistry may join hands and work together for the good of humanity and the honor of themselves.

THE PHYSICIAN AS A DENTIST.*

CALVIN WILLIAM KNOWLES, M.D., DD.S.
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The physician has practiced his dental specialty for many years previous to the establishment of a dental college, which took place in about the year 1839. When conditions pertaining to the medical side of dentistry arose, in years gone by, it was customary for these cases to be referred to the medical specialist or general practitioner.

Dental colleges being organized and a more thorough medical knowledge being required, it was not so necessary for the opinion of a medical man in cases which involved the medical side of dentistry.

Dentistry is regarded by some as an art or science, rather than a specialty in medicine, for the average dentist is not a physician, has received no medical education whatever, and practically knows nothing about general medicine, or else has a very superficial knowledge of it. It will be useless for me to discuss or to dwell on this point, as it has been referred to and rehashed for a number of years, without really coming to any definite conclusion in the matter.

Dentistry as practiced by some men is a specialty in medicine. Dentistry ought to be on the same footing as medicine, that is to say—educational requirements, a four years' course and an M.D. Not until these are required, will a dentist be recognized on the same footing as a physician.

Physicians as a rule regard dentists as mere mechanics, or men who have received a smattering of medical education. Do you wonder why we are so looked on!

I am sure it was a great mistake when dentistry branched out for itself, and I am afraid the day is far distant when we are going to shake hands with our brother medicos and be licensed by a medical board, although I hope the day will soon come.

You ask the question: Why should a dentist be a physician? First, because he would have an accurate knowledge of medical science, and would be able to cope with many diseases, and recognize many conditions which he was ignorant of before. Second, when he sees his patient he will recognize his condition, note the condition of the heart, pulse, etc., or whether a contagious disease be present. Third, the benefits from the training he derives and the advantage his knowledge is to his patients.

The advantages of the physician-dentist, as I may term him, are as follows: Being an M.D., he is on a rank with all medical men, providing he is a graduate of a regular recognized medical college, and a licentiate of the state in which he practices.

The prestige which goes with the degree is of value not only in the medical profession but also in the dental. One's knowledge being superior, one's work and one's fees will be superior. People will willingly pay more for the services of one in whom they place much more confidence.

Are not these sufficient reasons for a broader medical education? I am sure that if dentists had the opportunity and could spare the time they would most certainly take a medical degree.

The word stomatologist takes the place of the word dentist in being a newer and more up-to-date one, the use of which has become quite common in the larger cities. By the word stomatologist, we understand one treating diseases of the mouth, and especially the teeth. It perhaps sounds a little more medical than the word dentist, and would fit the physician-dentist a little better than the ordinary word dentist.

In ancient medicine the physician practiced the dental specialty. In an old manuscript consisting of over 100 pages a most interesting account of the anatomy, physiology, medicine, materia medica and therapeutics is given. The following are examples of some of the aphorisms given in the manuscript:

> There are three bones in a man's body, which when fractured will never unite again, and neither of these exists when a man is born, namely, a tooth, the knee pan and the os frontis.
>
> To extract a tooth without pain. Take some newts, by some called lizards, and those nasty beetles which are found on ferns in the summer time. Calcine them in an iron pot, and make a powder thereof. Wet the forefinger of the right hand, and insert it in the powder, and apply it frequently to the tooth, refraining from spitting it off, when the tooth will fall away without pain, it is proven.

Bleeding and local applications, such as poultices and counter irritants, are frequently alluded to. The exact date of the manuscript is not known, but it was probably written about the end of the fifteenth century. So you see the early physician practiced this specialty also.

Dentistry is one of the oldest professions dating from the time when people were placed in front of the temples in order that they might gain relief. All down through the different ages literature has been contributed by the different observers.

Dental surgery has always been associated with education and scholarly men, and not with mere mechanics or tonsorial artists.

Our literature of the present century is elegantly written and illustrated with beautiful pictures, giving in detail the different oral deformities, and the modes of treatment by surgical or mechanical means. In our own United States there seems to have been in the last fifty years a very rapid growth and high degree of development in dental science, as compared with other countries. The percentage of qualified persons practicing dentistry is fully as large as those in other similar callings of life. It is stated that after five years only about 20 per cent. remain in practice, and that the qualified and successful are only about 5 per cent.

Dentistry as a science and art is a noble calling and is worthy of the best efforts and of the finest minds.

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* Read in the Section on Stomatology of the American Medical Association, at the Fifty-sixth Annual Session, July, 1905.

THE PHYSICIAN'S DUTY TO THE CHILD FROM A DENTAL STANDPOINT.*

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BOSTON.

The possibilities for usefulness of the dental profession suggested to our mental horizon make us sigh and wonder if the time will ever come when the laity may receive the proper instruction regarding the real value of the organs of mastication.

Comparatively few understand and appreciate all that the faithful dentist may be able to accomplish.

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* Read in the Section on Stomatology of the American Medical Association, at the Fifty-sixth Annual Session, July, 1905.

But too many either wholly neglect this important subject or, perhaps worse, make the best bargain counter contract possible with the man who guarantees "satisfaction or no money back" until the skillful esthetic dentist cries out, "hideous, all is hideous," "cleanliness next to Godliness" will not be in that mouth.

To whom shall we turn in this hour of doubt? To the vast army of educators, ministers, physicians, teachers of schools, and all public institutions.

But the public educator will tell us that the child must learn to keep his mouth clean at home. Then how are we to use all influence possible to reach that home, while the school officials are becoming educated to this crying need of the age? Many ways suggest themselves, but our nearest relative in the field is the family physician. He it is who welcomes the little stranger into the world, advises the mother on many subjects, and tells the father that such a boy will become a sturdy man. Let us ask our medical brother not to forget those protruding and receding jaws, or that those temporary teeth ought to do duty for a definite period, and that in order that they may accomplish this they should be cared for from the time that they appear as small white pearls above the pinkest of gums (let us hope that the gums are as pink as they should be) and that the loss of one single tooth means quite as much to the superstructure of that face as a sill from the side of a house. More than this, the teacher must present a clean, wholesome mouth else his instruction will be without effect. It is example as well as precept that tells.

We would also urge in their contact with other educators not to lose sight of the fact that the care of the mouth ought to be included with the hygiene of the body.

The many medical specialists owe a duty to the race. A case of gastritis treated without first cleansing the mouth and its contents, certainly not! The laryngologist in operating for adenoids must realize that often sufficient bacteria may be found in a single tooth cavity to infect a whole regiment of soldiers, providing an open wound is convenient as a culture medium.

Our friend the orthopedic surgeon has opportunities for good which are unexcelled; what an array of faces for beautifying! How much real good could be done! When, O when will all crooked faces become straight?

It would seem as if the physician in many instances needed more than a gentle reminder, for I find in looking over literature on diseases of children that the reference to teeth consists chiefly of the physiology of development and dentition, while the neglect of cleanliness and deformity caused by too early extraction is condemned in one instance only, and the very important item of correcting deformities from causes either traumatic or congenital is overlooked entirely.

Oppenheim speaks of the unsatisfactory information to be found in medical text books, but does not improve matters much. He emphasizes, however, the fact that it is unsatisfactory. Koplik points out the effect of malnutrition, syphilis and nervous irritation. Doukin describes the pathologic conditions commonly supposed to be due to dentition. Rotch refers to development and dentition. Holt goes into the physiology and pathology from malnutrition. Jacobi speaks of the pathology of dentition and cautions against too early extraction, and Starr refers to development and dentition.

355 Boylston Street.

THE MEDICAL RELATIONS OF CERTAIN CONDITIONS OF THE MOUTH.*

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Although not specially occupied with disease of the mouth, I have such frequent occasion to inspect the buccal cavity in connection with dermatologic practice, that I have become very much interested in the subject. It also happens that many cases of disease of the tongue, gums, and buccal mucous membrane are sent to me, and many occur in my own practice.

The mouth occupies a very prominent place in the economy, as the point of entrance of food, and I need not, in this audience, dwell on the importance of having it, and all within it, in a proper condition. Few, among the laity at least, recognize fully the essential part which is played by the mouth and its appendages in the process of digestion, and consequently in the life and health of the individual. Mastication and proper insalivation are the first steps in digestion, and undoubtedly much ill health often results from the improper manner in which these are performed. I am convinced, from long observation, that hurried eating, imperfect mastication, soft food, and the taking of fluid while eatables are in the mouth, are fertile sources of trouble. This is a matter concerning which physicians and dentists should educate their patients. In this connection, of course, dentists render incalculable service, in placing the teeth, whether natural or artificial, in a condition suitable for their important work. As an illustration from the animal world, I may refer to the sometimes marvelous effects in poorly nourished horses, resulting from filing down the back teeth, as I have repeatedly observed in my own animals.

Incidentally, I would like also to mention the very great advantage of thorough mastication in sea-sickness. When other food will not remain in the stomach, one can often retain crackers or dry toast, thoroughly chewed and moistened only by the saliva, and it is a constant direction of mine to sea-going patients that these be so eaten while in bed; the mouth, though dry and parched, will in time moisten this food, and when thus thoroughly chewed the stomach seldom rejects it.

In considering the mouth, I have often been struck by the remarkable vitality of its tissues, which I think we hardly realize. Many times a day they may be subjected to repeated irritation from various foreign substances, or to mechanical damage, and yet how seldom are they permanently injured! The powers of healing of the buccal cavity sometimes seem to put all theories of surgical asepsis to naught. Bacteriologists tell us that a dozen or two different micro-organisms can always be found in the healthy mouth, and yet, somehow, none of them seem to exert a harmful influence in regard to the repair of injuries, even when pus, and presumably its coccus, is present. Witness the prompt healing after the extraction of a tooth, or even after the most serious surgical operation; and how rapidly a burn from hot food or drink, or from smoking, is healed. Surely nature has made wonderful provision to guard the portal through which the sustenance of the individual must pass, for many years.

The explanation for this is found, in part, in the character of the saliva, as it is proper to designate the combined secretion of the various glands opening into the buccal cavity, including those of the mucous membrane itself; of all of which we know far too little. Like all other animal secretions, the saliva undoubtedly varies materially under different circumstances. We all know well the excessive and watery secretion, induced by pilocarpin and occurring in mercurial salivation, and the diminished secretion caused by atropin. Nervous causes may also at one time produce a free flow of saliva and at another may almost arrest the secretion, and leave the mouth dry and parched, as may also febrile diseases. The effects of food are also well known and the expression "making the mouth water," is often used in regard to certain appetizing articles.

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* Read in the *Section* on Stomatology of the American Medical Association, at the Fifty-sixth Annual Session, July, 1905.

How far or in what manner chronic disordered states of the system affect the saliva is not known with any degree of certainty, but that they do have some effect is beyond doubt; anyone who has had much to do with patients suffering from many minor or gross ailments, will testify to the constant mention made of the condition of the mouth. The saliva is often spoken of as thick, viscid, sticky, or pasty, and the taste as sweet, sour, bitter, or offensive, while the expression "a dark brown taste in the mouth" is very common in New York, at least.

Last year, Drs. Stern and Lederer[1] presented before this Section the results of some observations and studies on changes in the salivary secretion affected by systemic disease, which while perhaps not so accurate and complete as could be desired, are certainly a step in the right direction. Thus, in diabetes they found the saliva to be acid, in about one-third of the cases, and detected glucose in over one-half of them. In uricacidemia, the saliva was alkaline in nearly nine-tenths of the specimens, and uric acid was demonstrated in nearly one-third of them. In acute gastritis, the saliva was acid in 8 cases and alkaline in 20; in hyperchlorhydria the saliva was acid in nearly 40 per cent of the cases, alkaline in about 22 per cent., and amphoteric in over 35 per cent., and in hypochlorhydria the saliva was acid in 2 cases, alkaline in 15, and amphoteric in 6 cases. The acidity was found to be due to lactic acid, or to acetic acid.

While these studies do not by any means cover the whole ground, or even a very small part of it, they are, as just remarked, a step in the right direction, and should serve as a stimulus to others to corroborate or to add to them. Unfortunately, I cannot contribute any exact data in this direction. I have occasionally tested the secretions from the mouth in patients exhibiting marked acidity of the system, and have found them acid, sometimes neutral, or alkaline, but I have not kept records which can be utilized, so that I can speak only in a general way, hoping sincerely that those who have more time, or determination, will investigate the matter and give us scientific data to build on.

As already stated, the saliva undoubtedly varies in quantity and quality under different circumstances, and physiologists tell us that the total daily average secretion, in health, is from two to three pints. The solid ingredients vary according to different analyses, from 3.5 to 11.7 parts per thousand, and the salts from 1.03 to 2.2 parts per thousand. It is interesting to note, that while an analysis of the ash from saliva showed nearly 50 per cent. to be potash and nearly 10 per cent. soda, with a number of other ingredients, but no calcium, an analysis of the so-called tartar on the teeth showed that "the chief part of the inorganic constituents consists of calcium carbonate and phosphate," with some 20 per cent. of organic matter.[2]

All of us realize that different changes take place in the mouth at different times, but, so far as I know, no clear or definite knowledge exists as to the conditions causing them. Time and again decay in the teeth starts up suddenly, or the teeth are found unusually soft or eroded or tartar collects very rapidly, or a pyorrhea alveolaris occurs, etc., and no adequate cause can be determined with certainty. It is easy to ascribe these and other conditions to the action of micro-organisms, which undoubtedly have their share in the work, but we must remember that the buccal cavity is continually full of innumerable varieties of these, and more modern sciences, in various directions, teaching that microbes can not develop and become operative except in a suitable soil.

We must look, therefore, to the constitutional condition of the individual, as modifying the saliva, or soil in which the micro-organisms are bathed, and which in perfect health seems to possess such a marvellous power of protecting all within the buccal cavity from the inroads of bacterial life; even as the phagocytes in the blood guard the general system.

It is, of course, a common observation that debility or exhaustion of any kind often leaves its imprint on the structures within the mouth, as elsewhere. The less vital resistance there is in the tissues, the more readily do they yield to microbic invasion.

Dyspepsia is undoubtedly a fertile source of trouble in the mouth, as is constantly observed in the case of so-called "canker sores," and decay of the teeth may continually be found to vary with the condition of the stomach. In the studies referred to by Stern and Lederer,[1] in acidity of the stomach the saliva was found to be acid in nearly 40 per cent. of the cases.

The acid condition of the system associated with gout, rheumatism, and rheumatoid arthritis also has an effect on the teeth and gums, as I have witnessed time and again, in many cases of pyorrhea alveolaris, some of which I have watched for considerable periods of time. The disease has varied immensely at different times, according to the acidity of the system, often as indicated by the urine, and in many cases I have seen the very greatest benefit result to the condition of the teeth and sockets from a purely antacid treatment. We all recognize the value of alkalies locally in the mouth, and the injury from acids.

In the light of what has been said, should not the dentist, who is primarily responsible for the mouth, seek the aid of the physician in connection with many of the conditions about which he is consulted? Even as the physician recognizes the need of special skill in dental matters, and advises patients to seek it.

The subject of diseases of the mouth is a very large one, and can hardly be touched on now, but it is such an important matter, and dentists so often have the opportunity of seeing these affections early, when much can be done by proper treatment, that a few words may be of service.

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[1] Stern and Lederer: The Journal A. M. A., Dec. 10, 1904, p. 1765.

[2] Hammersten: Text-book of Physiological Chemistry, New York, 1898, p. 281.

Syphilis is, of course, the most frequent cause of lesions within the buccal cavity, for few patients with this disease escape, at one time or another, from having some affection of the mucous membranes occasioned thereby: For many reasons, therefore, it is very important that dentists should appreciate and be able to recognize the effects of the disease in this location. This, of itself, is a very large subject, on which I have twice addressed the dental profession,[3] and which cannot be fully considered now. I must earnestly utter the warning, however, that dentists should be extremely cautious, whenever there are sores, even though they be very superficial, on the lips, tongue, or buccal mucous membrane, and that if not quite certain as to their character, they should seek competent advice before exposing themselves or their other patients to the dangers of syphilitic inoculation. As I showed in the first paper alluded to, there are many instances on record where this has occurred, and, of course, multitudes which have never been reported in the journals.

Aside from canker sores, from disordered digestion, leukoplakia is probably the next most frequent condition of disease found in the mouth, chiefly in men, and principally in those who use tobacco. This is commonly a harmless affair, though it may be the starting of an epithelioma, especially if it has been injudiciously treated. It will sometimes give trouble by mildly unpleasant sensations, and often perplexes the physician from its resemblance to some of the lesions of syphilis. Many a patient has long been under antisyphilitic treatment uselessly because of the persistence of this relatively innocent local affection, leukoplakia, which has no connection whatever with syphilis.

Epithelioma is the most important disease of the region of the mouth, and elsewhere, and it is in connection with this often lamentable affection that dentists can frequently be of the most efficient service, in many ways.

In a considerable number of cases of epithelioma of the tongue, and sometimes in that of the inside of the cheeks, the disease has started and is often kept up by irritation from sharp, rough, and decayed teeth, and from amalgum fillings, and these should all be sedulously looked to and corrected. Also, when there is any process suspected to be epitheliomatous, the patient should be urged to seek competent medical advice; for we know that while this disease begins as a purely local process, by neglect or by continued irritation it becomes deeply seated, the glands become infected, and often it is well nigh incurable. Happily, the former custom of touching all such sores with nitrate of silver or some other caustic is no longer largely practiced, but I must again raise my voice earnestly against all such meddlesome practice; for in times past I have seen many epitheliomata which had been thus goaded on until their condition was very serious.

Lupus also sometimes affects the gums and palate, but this is a disease which is so very rare in this country that it is hardly to be considered. It commonly exists elsewhere, especially on the face, before attacking internal tissues.

Localized tuberculosis, however, is not so very infrequent in or about the cavity of the mouth, and it is not infrequently mistaken for a syphilitic manifestation. Patients should be warned against neglecting this.

There is one more aspect of the medical relations of certain conditions of the mouth which I would like to mention before closing, that is the effect on the general system, or on special portions of it, in a reflex manner or otherwise, from error or disease in the teeth or jaws.

We all recognize the harm done to digestion by bad or imperfect teeth and have seen the great benefit to the general health resulting from a proper repair and adjustment of the organs of mastication, so that this process can be perfectly performed. Numberless instances are on record, and we must all have seen cases, where some error in the teeth and jaws has caused reflex disorder, headache, neuralgia, etc., which have ceased when the trouble has been rectified. Hence, the physician has frequent need of the dentist, and should ever bear in mind the assistance which can be obtained in this direction, in obstinate cases.

Finally, purulent discharges in the mouth, as from abscesses or from pyorrhea alveolaris, etc., passing into the stomach, have a more or less disturbing influence on digestion and nutrition, and should be corrected for this reason, if for no other. The same is undoubtedly true in regard to the results of decomposition of food lodged between the teeth, and from mouths not perfectly cleansed, one or more times daily. We all know the dreadful condition into which the mouth sometimes gets in acute or febrile diseases, with sordes on the teeth, and it is a question if some of the unpleasant general symptoms occurring in these cases are not caused by the gastric or intestinal fermentation thus set up. It seems certain that some of the discomfort to the patient, and possibly even some serious complications could be avoided if more attention were paid to antisepsis in the mouth at these times, when it is notoriously neglected.

I have jotted down a few of the many thoughts which have come to me, from experience, in the hope that a discussion of some of the points suggested may result in a more careful and complete consideration of the medical relations of certain conditions of the mouth.

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DISCUSSION.

ON PAPERS BY DRS. PLATT, KNOWLES, STEEVES AND BULKLEY.

Dr. Vida A. Latham, Chicago, said that her experience in the last few years has been that the conditions of the mouth and teeth are based almost entirely on systemic conditions. One of the great objects of the work of this section is to try to show a relationship between the system and the teeth and adjoining structures. To her mind, syphilis has much to do with the condition of the mouth. She said that she has seen cases in her practice in which syphilis had been contracted, and in which the teeth before infection had been in splendid condition, and afterward discoloration, decay, erosion and abrasion have been marked, with interstitial gingivitis resulting in pyorrhea alveolaris and wasting of the alveolar processes. Dr. Latham said that saliva is a physiologic secretion, and it will remain for a specialist to work out the relationship between pathologic conditions of the saliva and constitutional diseases. In the last two years Dr. Latham has had two cases of gonorrheal infection of the mouth—the only two that she has ever seen. They were demonstrated by microscopic examination, and it was proved conclusively that they were due to infection from the fingers—uncleanliness—rather than from systemic cause. These cases were unusually peculiar. There was marked inflammation with much pain, the teeth became loose, there was a greenish, slimy condition of the gums, and there was slight fever.

Dr. M. I. Schamberg, Philadelphia, said that during the past year he had seen just such cases as Dr. Bulkley had mentioned. He saw one case of lupus, several cases of carcinoma of the mouth, and in one case the main interest lay in the early diagnosis. The dentist who referred the case to Dr. Schamberg did so because he was rather doubtful as to the condition. Microscopic examination of the growth, which was very slight at the time, showed it to be an epithelioma. It was treated by the *x*-ray, and an absolute cure took place. Several cases of syphilis of the mouth in various stages have come under Dr. Schamberg's care during the past year. The last case was an initial lesion immediately posterior to the superior central incisors. The case had gone on with a wrong diagnosis for three weeks, both the physician and the dentist failing to discover the cause of the lesion, and the condition was pretty bad. Dr. Schamberg questioned the patient as to possible inoculation, and also as to whether there was any eruption on his body; until he examined the body himself no thought of secondary eruption had been suggested, but he found a very pale, macular syphilid on the abdomen, which decided the case. The mouth lesion had been masked by the application of caustics and other forms of treatment. Such cases show the necessity for thorough insight into medicine generally, and also that the general practitioner is too frequently derelict so far as studies of the mouth are concerned.

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[3] Bulkley: Dangers Arising from Syphilis in the Practice of Dentistry, Internat. Dental Jour., August and September, 1890. Manifestations of Syphilis in the Mouth, Trans. New York Odontol. Soc., 1898, p. 11.

Dr. G. V. I. Brown, Milwaukee, said that the value of the dentist's work lies in being able to diagnose cases early. He referred to Dr. Bulkley's statement that the most frequent cause of lesions within the mouth is syphilis, and said that it is a difficult matter for those who deal with the lesions and do not treat syphilis in any sense except when forced to do so to decide whether or not the lesion is syphilitic. He is inclined to believe that syphilis as an etiologic factor *per se* is greatly over estimated. In some papers Dr. Brown thinks that too much emphasis has been laid on it. There are many cases in which a diagnosis of syphilis has not been made, and in which the one thing the patient needs is the proper treatment for syphilis, without which, of course, other measures would not only be useless, but would probably result in serious injury to the patient. On the other hand, Dr. Brown [illegible]d that frequently time is wasted in endeavoring to over[illegible] systemic conditions which do not exist, when simple, [illegible]rect, prompt, surgical treatment is required.

Dr. M. L. Rhein, New York City, stated that he had occasion last year to take exception to the name of saliva as applied as being misleading. There are in the mouth the submaxillary glands, the sublingual glands and the parotid glands. It is true they are the salivary glands of the mouth, and that they give forth a large percentage of the fluid that circulates in the mouth, but added to these there are all the eliminative secretions of the mucous follicles, which add materially to this fluid. Up to the present, this portion of the fluid has had no recognition given to it as having any of the function that pertains to salivary glands, and it is for this reason, Dr. Rhein said, that exception should be taken to the use of that term. He declared that he knows that a great many workers take exception to this criticism, and prefer to use the word "saliva" as it has been used in the past. Dr. Rhein agreed with Dr. Bulkley in his explanation of some of the lesions of the mouth and said that the great trouble is that the majority of physicians have no knowledge regarding the normal physiologic condition of the mouth, and consequently when they examine an abnormal mouth they are at sea in regard to making a proper diagnosis either of what may be wrong, or as to whether it is even abnormal as distinguished from physiologic. He said that he has had most startling experiences of this kind, and finds that the medical text-books on this subject are almost of no value. In most instances, the conceit of the average medical teacher carries him past this important specialty. To illustrate the average medical man's idea of the mouth, Dr. Rhein told of a patient who presented himself last fall with lesions in his mouth that Dr. Rhein had no hesitancy in diagnosing as marked leukoplakia, and of such a nature that he thought there was strong suspicion of syphilitic etiology. He found that the physician under whose care the patient had been for a number of years had overlooked important facts; he seemed to have paid no attention to the patient's history of losing his hair about five years previously and to other symptoms. On the physician being requested to look into the mouth symptoms, he informed Dr. Rhein by telephone that it was simply an inflammatory condition, and that in a few weeks the patient would be perfectly well. Six weeks later the patient had not only not been cured, but the symptoms had increased in severity; there was an active pathologic condition present that was so apparent that Dr. Rhein refused to have any further connection with the case unless some attention was promptly given to the general condition, and when he again called the physician's attention to the patient he finally took him to another practitioner who at once confirmed the diagnosis of leukoplakia of syphilitic origin. The patient was placed on antisyphilitic treatment and the symptoms were decidedly ameliorated. Dr. Rhein believes that a large proportion of cases have a decided cause of this nature. The trained stomatologist has opportunities for the minute and careful observation of what he sees in the mouth that so educates his sense of perception between the various conditions that it places him in a peculiarly fortunate position as regards diagnoses. He believes that there is no gainsaying the fact that has made the value of the dental services to the public at large in this country of inestimable value as compared with what they have received in other parts of the world, and that is the absolute thoroughness of the work. Dr. Rhein said that there is no reason why the highest scientific utilization of research work of all that we can gain in medicine should not be put to advantage in what is apt to be described at times, and that is the handiwork of the dentist, and he protested against taking one iota of credit from the value of that handicraft.

Dr. Duncan Bulkley, referring to stomatology vs. dentistry, said that physicians do not have to do with the teeth entirely, but with a thousand other things as well. Stomatology, he said, is of very great advantage, and if that can be introduced everywhere I think it will be a step in advance. He agreed with Dr. Brown that one thing must not be praised to the disparagement of another. American dentistry is recognized all over the world. There are many cases of pyorrhea alveolaris which it would unquestionably be folly to send to a physician. In those cases which have been under his care he has used peroxid of hydrogen freely. Undoubtedly, the first item is proper surgical treatment and perfect dental cleanliness. On the other hand, he asked why a patient has this condition; it is not from the parasites in the mouth. In reference to the saliva, he said that nine-tenths of it is made from the three groups of glands, but the mucus must, of course, be counted. He did not agree with Dr. Rhein as to using the word "eliminative." There is no reason, he said, to believe that these glands of the mouth have any eliminative function; it is simply a moistening process. He called attention to the fact that some of the best dentists are studying and have studied medicine since they began practicing, and are now graduates in medicine. All branches of medicine should be co-ordinate.

Dr. Bulkley said that he still holds that almost everybody who has had syphilis, at some time or other, has had mucous patches; he has had some patients who have been infected from soiled instruments. He has seen chancre in almost every part of the mouth and tongue. He also stated that he has seen many cases of wasting of alveoli. In time gone by it was supposed that mercury did this, and it created a great furore against mercury. He asked how many physicians have reason to believe from their experience that mercury does salivate. Dr. Bulkley has not yet found cases in any number in which he thought the mercury was responsible. He has had cases with syphilitic alveolar trouble. He said that he does not know anything about the saliva in syphilis—whether or not it is modified, though he is sure that it is altered in syphilis. The saliva is not an excretion; it is a secretion, and that secretion can be altered by disease. He has never happened to come across any cases of gonorrhea of the mouth. He distinguishes between leukoplakia and syphilis. Legally, one does not speak of syphilitic leukoplakia any more than of syphilitic psoriasis. Leukoplakia is one thing and mucous patches of various degrees are another. There is a great deal of leukoplakia sometimes from smoking and from unknown causes, which he is sure is not syphilis. The diagnosis is often very difficult. He concluded by saying that we are just entering on the right aspect of what has been called dentistry.

EARLY DIAGNOSIS OF SURGICAL DISEASES OF THE URINARY TRACT.*

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For the purposes of this paper the urinary tract will be limited to the kidney, ureter, bladder and prostate. The prostate, although essentially a genital organ, when diseased, interferes more with the urinary function than with the genital function, and must not be left out of account in any discussion of the urinary tract.

That early recognition of diseased conditions in these organs makes the desired "cure without undue risk, delay or pain" more often possible needs no argument, and to the physician who uses his trained brain, fingers and eyes, especially if he has access to a good microscope, there is little difficulty in recognizing the indications for further careful investigation of the urinary tract by the most modern methods of special diagnosis.

Interesting as these special instruments are, and fascinating as is their use, this paper is to deal briefly and solely with the indications which should lead to the employment of one or more of them.

In order to obtain some idea of the frequency of diseases in these organs as compared with general surgical diseases, the annual reports of the Massachusetts General and Boston City Hospitals have been taken for the last five years. During this period there were over 35,000 cases in the surgical beds of the two institutions. More than 1,100 of these are said to have presented some lesion of these organs, being about 3.1 per cent. of the total surgical admissions. The prostatic diseases lead, with 427 cases; the kidney follows, with 373 cases; the bladder next, with 304 cases, and the ureter last, with 7 cases. The grouping in this table is my own and requires further evidence before it is fully accepted, though it is in accord with the more recent theories.

SYMPTOMS.

Most patients with disease in the urinary tract consult their physician on account of one or more of three conditions. First, localized pain; second, altered function; third, hematuria. When all three symptoms are present, there is hardly a doubt of the presence of some definite surgical condition in the urinary tract.

That there may be some condition outside which reflexly excites symptoms is indicated by a case recently seen with Dr. Mitchell of Portland, Maine. Dr. Mitchell had done a complete and satisfactory perineal prostatectomy a few days previously; the healing was perfect and urethra free, but the man continued to have pain referred to his bladder, and he urinated every half hour. Naturally, blood and some pus were present in his urine. Finding tenderness over the right kidney and along the ureter, I suggested exploration, but both kidney and ureter were found to be normal.

At autopsy two months later, a bony tumor of the bodies of the lumbar vertebræ was found, not causing direct pressure on either kidney or ureter, but presumably irritating the nerve supply of the bladder. This combination of conditions is so very rare that it may be disregarded in making a preliminary diagnosis.

When any two of these symptoms are found, I believe that all surgical conditions in the urinary tract should be ruled out before attention is directed to other organs, or the patient is left to Nature somewhat upset by the various so-called urinary antiseptics and sedatives.

SURGICAL DISEASES OF THE URINARY TRACT
IN BOSTON CITY HOSPITAL AND MASSACHUSETTS GENERAL HOSPITAL
FROM 1900 TO 1905.

KIDNEY.		
Inflammatory::		
Pyelitis	13	
Pyonephrosis	33	
Perinephritic abscess	26	
Tuberculosis	46	
Calculus	73	
Total	191	= 51%
Mechanical:		
Hydronephrosis	27	
Movable	89	
Rupture	26	
Total	142	= 38%
New growth:		
Sarcoma	19	
Carcinoma	6	
Hypernephroma	7	
Adenoma	1	
Cystadenoma	1	
Neoplasm	1	
Total	35	= 9%
Other disease	5	
Grand total	373	
URETER.		
Inflammatory:		
Tuberculosis	1	
Abscess	1	
Ureteritis	1	
Total	3	
Mechanical:		
Stricture	2	
Calculus	2	
Total	4	
New growth	0	
Grand total	7	
BLADDER.		
Inflammatory:		
Cystitis	100	
Tuberculosis	24	
Total	124	= 41%
Mechanical:		
Calculus	98	= 32%
New growth:		
Carcinoma	29	
Papilloma	11	
Sarcoma	1	
Total	41	= 13%
Other disease	41	
Grand total	304	
PROSTATE.		
Inflammatory:		
Hypertrophy	329	
Prostatitis	40	
Abscess	20	
Tuberculosis	3	
Total	392	=91%
Mechanical	0	
New growth:		
Carcinoma	26	
Adenoma	4	
Sarcoma	3	
Total	33	= 8%
Other diseases	2	
Grand total	427	

"Other diseases" includes all cases with diagnosis of hemorrhage and others without definite diagnosis.

Of the single symptoms pain is of little value in directing attention to the urinary tract, and the great majority of pains without disturbance of function or blood in the urine will be found to be caused by some other organ or system.

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*Read before the Surgical Section of the Mass. Medical Society, June 13, 1905.

Disturbance of function is almost worthy of being called pathognomonic. The normal adult individual, under average conditions of heat, excitement and drinking, empties his bladder from four to seven times a day, and should be able to sleep seven or eight hours undisturbed. There should be no difficulty, discomfort or urgency about the act. Regular variations from these habits are the first of all symptoms to appear in several urinary diseases and must be inquired into carefully and regarded with grave suspicion when persistently present.

Hematuria always means something wrong in the urinary tract and when persistent or when recurring intermittently it should lead to careful study as to its source and cause, not because the loss of blood is always dangerous, although it may hasten the end in some conditions, but because it is almost invariably an indication of some serious and possibly curable condition.

It is possible for a patient to have some surgical disorder of the urinary tract in which none of these symptoms appear for months, but under continuous observation something will be found if these organs are kept in mind.

So far as I have been able to look up records, there is only one of these surgical conditions which may not be found at any age. Infants and children have been reported as having movable kidneys, calculi, malignant growths, and in fact all these diseases except prostatic hypertrophy.

Beyond the fact that most of the movable kidneys recorded are female and all the hypertrophied prostates male, either sex may suffer from any of these conditions.

Instead of discussing the symptoms of each disease separately, I have grouped the most important symptoms and attempted to show why they appear under different conditions.

PAIN.

Pain from disease of the kidney may be felt at the point of injury or may be referred to the opposite side or to some distant point. Any mechanical condition which interferes with the outflow of urine, such as a kink in the ureter, or stone, or clot, or swollen lining, *or tumor pressure, or stricture, or ligature, which prevents* the free flow of urine from the kidney, will cause pain varying in degree according to the location and character of the obstruction. The same sort of pain may be felt in certain infections of the kidney in which the bulk of tissue within the capsule is increased, or in which there is hemorrhage under the capsule, or after artificial distention of the pelvis.

As has been previously pointed out, there are some observations which go to show that the kidney is extremely tolerant of all conditions which do not stretch its capsule, and that simple slitting of this capsule for a time will relieve the pain of pelvic distention, even when caused by stone in the ureter. How much, if any, sensation is possessed by the kidney beyond its reaction to capsular stretching or to what is sometimes called internal pressure I do not know.

Many malignant growths cause no pain for a long time, especially in children. The same is true of some renal calculi, but just as soon as a blood clot or fragment of tissue, or bit of calculus plugs the ureter, the tynkoplakittack of pain begins.

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If there is any characteristic of pains arising in the kidney it is their radiating character. They may be referred to any point between the shoulder and ankle on the same side, to the region of the opposite kidney, to the pelvis, or to the abdomen generally, and all at the same time.

Pain in the ureter is produced by stretching or distention. Passing a ureteral catheter into a normal ureter, even if purulent urine is flowing through it, causes less pain than passing a soft rubber catheter into a urethra. Apparently there is little sensation except that of tension in any case, but this may become extreme pain when a concretion is being forced down by the peristaltic contractions.

There is no possibility of being sure whether a pain which a patient describes is due to a renal or to a ureteral condition without other evidence. The patient's sensations may be precisely the same in either case. The bladder is not sensitive unless inflamed, and then it tolerates catheters and drainage tubes which are not moved about. Most of us are aware of the location of the dull ache of an acutely distended bladder, yet many patients carry from a few ounces to some pints of urine constantly without being conscious of it. From one woman who was not suffering very greatly I drew six quarts and half a pint of urine within one-half hour, and this is much below the greatest record.

Some patients with tuberculosis and new growths in the bladder suffer very little during the early stages, when radical treatment may be expected to produce the best results. One of my patients with cancer of the bladder had pain only on urinating until the growth reached a size which mechanically obstructed the urethral orifice. Many patients with calculi are reported to have suffered little until the bladder mucosa became damaged and infected.

In prostatic cases the patients suffer pain like that in kidney disturbances caused by stretching of the capsule in acute inflammatory conditions and from the secondary changes which occur in the obstructed bladders. Pain from prostatic trouble alone is usually referred to the rectum, glans penis, or perineum. When the bladder is involved there is the local discomfort before referred to, and often the almost constant tenesmus due to irritation at the orifice of the bladder and in the prostatic urethra which may amount to pain.

Of the diseases presented in the cases from the two hospitals, those representing acute infections are most likely to cause constant pain, those representing or producing foreign bodies, such as calculi, or clots of blood or pus, or good-sized fragments of tissue almost always produce intermittent pain, while the new growths may be painless for years.

In a general way, pain is more likely to be referred to a point below its origin than above it, but disease of the lower part of the tract is so likely to lead to infection or to painful distention above it that there is always a possibility of being led astray.

ALTERED FUNCTION.

Somewhere I have read that the act of urination begins with a pull of the ureteral muscle fibers which bound the trigone and are continued into the verumontanum of the prostatic urethra or to a corresponding point in the female urethra.

This muscular pull opens the internal orifice and allows some fluid to trickle into the urethra. The voluntary sphincter may now contract and force the fluid back for a time or allow it to pass on. If this description be correct, and I know of no anatomic, experimental or personal reason for doubting it, it explains how the function may be altered by conditions remote from the bladder.

Frequency.—Frequency of micturition may be increased by any condition which diminishes the capacity of the bladder or causes irritation of these lower ureteral fibers.

In cystitis, therefore, when the capacity of the bladder may be reduced to a few cubic centimeters, in tumor and calculus cases in which there is constant irritation of the trigone, and especially in the occasional acute inflammations which accompany an enlarging median lobe of the prostate, and which directly affect these fibers, we may expect increased frequency of micturition. To explain its occurrence in renal and ureteral conditions, it is only necessary to recall the continuity of the ureteral fibers from the kidney pelvis to the verumontanum or the corresponding point in the female urethra.

We have all known the frequent dribbling overflow of a distended bladder to be mistaken and treated—or neglected—as an "inflammation of the bladder" or a little "kidney trouble." There is no excuse for a physician's making an error of this sort. He has no right to guess when he can find out.

Urgency.—Some individuals find it impossible to resist the impulse to urinate. If they attempt to prevent the flow, they leak. In every case there is an uncontrollable contraction of the bladder, due possibly to irritation of the lower ureteral fibers, to a calculus in the ureter or bladder, to a new growth in the bladder, to an enlarging median lobe of the prostate, to an inflamed condition of the urethra nearest the bladder outlet, or else to an incompetent voluntary sphincter, any of which conditions may disturb the normal relation between bladder capacity and contraction.

I have seen examples of all these conditions and doubtless there are others that will produce the same symptom. It is too suggestive to be neglected and must bear an intimate relation to

Incontinence.—Except in the overflow of distended bladders and as it may suggest search for and removal of all irritations wherever found, incontinence of urine has no surgical significance in this paper.

Difficulty in Urination.—This is perhaps as common a symptom as any and results from either mechanical obstruction or from some fault in the nerve supply. It occurs in conscious patients with paralysis of the abdominal muscles and competent sphincter, as well as in those who are in a comatose or delirious condition.

My observation has led me to believe that paralytic and comatose patients are quite as apt to be incontinent as to have retention, unless there is some obstacle which they had previously been able to overcome by voluntary abdominal pressure.

The mechanical obstruction of which we hear most to-day is the hypertrophied prostate, and while unable to discuss it as I should like, I would remind you that it is not a disease of advanced life exclusively. Several cases have been reported in the thirties, and between forty and forty-five the number of men whose prostate begins to produce some discomfort and residual urine is very considerable.

Anuria.—This may occur in the course of certain acute diseases, as a result of some forms of poisoning, after trauma to the urinary tract below the kidney, or to the kidney itself, from vaguely understood reflex disturbances outside the urinary tract, and from any condition which mechanically obstructs the flow of urine into the bladder. The last group of cases is not always easy of separation from the others. Fortunately patients usually go from two to five days before symptoms of uremia appear, and this allows sufficient time, if properly used, for decision and for operative measures if necessary. Absence of urine in the bladder during twelve consecutive hours, if proved by a catheter, may well arouse grave apprehensions, and twenty-four hours is a limit beyond which the responsibility lies very heavily on any single practitioner.

HEMATURIA.

Red blood may show in the urine in amounts recognizable to the naked eye, with or without clots, or in such quantity as only to be recognized by the aid of the microscope. In either case, it may be intermittent in appearance, but in the first case blood is likely to be found on microscopic search long after it has apparently disappeared.

While it may come from any part of the urinary tract and from several causes, persistent or recurring hematuria is so strongly suggestive of a new growth that, next to anuria, it is the gravest single symptom of all.

According to Albarran, hemorrhage was the first symptom in 78 per cent. of 140 malignant bladder tumors and was present at some period in nearly all. According to Israel, 70 per cent. of 66 malignant renal tumors were first indicated by hemorrhage, and 93 per cent. showed it at some period. Deneclara, in 168 cases of tumor of the kidney in the adult, found that hemorrhage was the first symptom in 69 per cent. Even under exceptionally favorable conditions the cause and source of the hemorrrhage may remain in doubt for years.

A patient of mine had hematuria for three years without renal symptoms or palpable tumor. There was no loss of weight or strength and he was particularly active physically. He had a slowly growing prostate with considerable swelling and redness of the median portion, as seen through a cystoscope, which was supposed by one of our most experienced men as well as by myself, to be the source of the hemorrhage. A third surgeon, seeing him six months later, found a distinct renal tumor and a hypernephroma at operation. This experience has taught me never to accept a probable cause of hematuria without ruling out other possible causes.

While hematuria may possibly be due to some harmless condition, its almost constant association with malignant disease and calculi, make it, to my mind, quite as grave, though not so urgent a symptom as anuria of a few hours' duration.

All writers agree that blood in the urine appearing without reference to any physical violence, exertion, or jarring, is very suggestive of new growths. When the hematuria follows such violence, even if slight, they consider it more probably due to the presence of a calculus. In either case it is a hematuria.

If there be also a pyuria, the diagnosis is complicated by an infection which may wholly account for the hematuria or which may be a secondary process grafted on to the original disease.

Continuous or Recurring Discomfort.—This brings

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Anuria.—This may occur in the course of certain acute diseases, as a result of some forms of poisoning, after trauma to the urinary tract below the kidney, or to the kidney itself, from vaguely understood reflex disturbances outside the urinary tract, and from any condition which mechanically obstructs the flow of urine into the bladder. The last group of cases is not always easy of separation from the others. Fortunately patients usually go from two to five days before symptoms of uremia appear, and this allows sufficient time, if properly used, for decision and for operative measures if necessary. Absence of urine in the bladder during twelve consecutive hours, if proved by a catheter, may well arouse grave apprehensions, and twenty-four hours is a limit beyond which the responsibility lies very heavily on any single practitioner.

HEMATURIA.

Red blood may show in the urine in amounts recognizable to the naked eye, with or without clots, or in such quantity as only to be recognized by the aid of the microscope. In either case, it may be intermittent in appearance, but in the first case blood is likely to be found on microscopic search long after it has apparently disappeared.

While it may come from any part of the urinary tract and from several causes, persistent or recurring hematuria is so strongly suggestive of a new growth that, next to anuria, it is the gravest single symptom of all.

According to Albarran, hemorrhage was the first symptom in 78 per cent. of 140 malignant bladder tumors and was present at some period in nearly all. According to Israel, 70 per cent. of 66 malignant renal tumors were first indicated by hemorrhage, and 93 per cent. showed it at some period. Deneclara, in 168 cases of tumor of the kidney in the adult, found that hemorrhage was the first symptom in 69 per cent. Even under exceptionally favorable conditions the cause and source of the hemorrrhage may remain in doubt for years.

A patient of mine had hematuria for three years without renal symptoms or palpable tumor. There was no loss of weight or strength and he was particularly active physically. He had a slowly growing prostate with considerable swelling and redness of the median portion, as seen through a cystoscope, which was supposed by one of our most experienced men as well as by myself, to be the source of the hemorrhage. A third surgeon, seeing him six months later, found a distinct renal tumor and a hypernephroma at operation. This experience has taught me never to accept a probable cause of hematuria without ruling out other possible causes.

While hematuria may possibly be due to some harmless condition, its almost constant association with malignant disease and calculi, make it, to my mind, quite as grave, though not so urgent a symptom as anuria of a few hours' duration.

All writers agree that blood in the urine appearing without reference to any physical violence, exertion, or jarring, is very suggestive of new growths. When the hematuria follows such violence, even if slight, they consider it more probably due to the presence of a calculus. In either case it is a hematuria.

If there be also a pyuria, the diagnosis is complicated by an infection which may wholly account for the hematuria or which may be a secondary process grafted on to the original disease.

Continuous or Recurring Discomfort.—This brings us to the most frequent of all urinary conditions—continuous or recurring discomfort rather than pain, often poorly localized, little if any disturbance of function, little if any blood in the urine, but pus in the bladder, urine continuously in varying amounts. The majority of patients with these symptoms can be cared for by any man who will handle a catheter and his solutions in a cleanly way; many will recover if they will wash themselves out by drinking enough water, but the other sort who continue in about the same condition for months, swallowing everything from hexamethylenamine to various nostrums, are the patients who appear later with incurable tuberculosis, or inoperable cancer of bladder, ureter or kidney, with trabeculated and rotten bladders, with kidneys ruined by calculus obstruction, or honeycombed with pus, or transformed into that puzzle of the pathologist—amyloid. These are the cases which arouse regret in the mind of the surgeon, or of the pathologist.

If these symptoms will disappear at all under irrigation and monosyllabic or polysyllabic treatment, they will go within a few weeks at most. If they persist longer, either the infection is not reached by the bladder irrigation or controlled by the chemicals, there is an infection in the deeper tissues, or else the pus is masking some condition like a calculus or a new growth, which is entirely distinct from the infection, though it may be the predisposing cause.

This is the time to study the case by every available method until the condition is understood and proper measures and time for treatment are determined. A patient neglected at this stage may get well from a colon bacillus pyelitis or may pass a small calculus through the natural channels, or possibly make a spontaneous recovery from a tubercular infection, but who can tell which patient will do this and which get steadily worse.

Of pyelitis, Kelley of Baltimore says in substance: "It is of the utmost importance, but is rarely recognized in the earlier stages, or when found is often thought unworthy of attention because not immediately provocative of serious symptoms. The kidney is an organ more necessary than the uterus or Fallopian tubes, but there is a general indifference to mild cases of pyelitis, while the large pus kidneys are noticed. It is important to recognize any grade because the severe cases may result from the mild."

Pyelitis, pyelonephrosis, pyonephrosis, perinephritic abscess, all infective processes, cover one-fifth of all surgical kidney admissions to the two hospitals. If to these we add the cases of tubercular infection which may also show early purulent urine, we take in nearly one-third of the surgical kidneys.

If we follow modern theories and include the calculus cases as caused by an earlier inflammatory condition which might possibly have been recognized, we find that one-half of these surgical kidneys might have been suspected in an early stage from the presence of pus in the urine, and that the patients might possibly have been spared some suffering at least.

Inflammatory processes in the bladder are likely to be recognized earlier because of the alteration in function which nearly always accompanies them and because of the pain which also impresses the patient with the idea that something is wrong.

The inflammatory condition which persists longest without symptom is found in prostatic hypertrophy. Often nothing is noticed by the patient until he suddenly realizes that he has to rise one or more times at night to empty his bladder. This symptom in a man over 40 is always suggestive and characteristic of a bladder with residual urine.

General Symptoms.—Patients with surgical disease of one kidney are apt to sleep on the affected side; varicocele may develop on the same side as a kidney tumor; kidneys with acutely distended pelves and capsules are exquisitely tender, while some hydronephrotic kidneys and very large tumors may be little sensitive. Rectal or vaginal touch may discover tenderness over the lower end of one ureter indicating trouble higher up on that side; median obstruction in the prostate is not always to be felt by the rectum. A tender "Israel's point"—junction of twelfth rib with the outer border of erector spinæ, is valuable in identifying the kidney as a source of vague abdominal pain. The normal kidney, ureter, bladder and prostate are not painful under reasonable pressure.

SUMMARY.

Localized pain, altered function, hematuria, with or without pus—these are the cardinal symptoms of surgical disease in the urinary tract. Tumor, tenderness and residual urine do not require complicated apparatus for their recognition, and their presence or absence can be determined by any physician who will take the trouble to examine his patients properly. These preliminary points are simple, sufficient for a correct diagnosis sometimes, and always trustworthy in indicating the urinary tract as a source of trouble. Nothing in surgery requires more concentrated attention, more accurate observation, or a finer technic, than a complete and correct preoperative diagnosis of the more obscure conditions in the urinary tract which stand between our patients and health.

LATERAL DISPLACEMENT OF TENDON INSERTIONS FOR THE CURE OF STRABISMUS.*

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DENVER.

The recti muscles act on the eyeball from a common origin. Their normal directions prolonged backward would pass practically to a common point in the outer, lower wall of the optic foramen. Their differences of action depend on differences of insertion. By lateral displacement of its insertion one rectus might be made to take up the function of either of the others. A displacement of not more than 15 mm. up or down, and out, would cause the internus to perform the function of the superior or the inferior rectus.

Some lateral displacement of the insertion of the recti tendons is possible; and any portion of such lateral displacement can bring about a corresponding change of function. Conceive a plane passed through the insertions of the recti muscles roughly perpendicular to the antero-posterior axis of the eyeball, intersecting the sclera in the circumference of a circle. Then the new function of the muscle, produced by the lateral displacement of its insertion, corresponds to the sine of the arc of that displacement.

Let Fig. 1 represent such a circumference with the internal superior, external and inferior recti insertions at A, B, C, D, respectively. If the insertion of the internus be removed from A to E, it will continue to turn the eye inward with a force measured by M O, the cosine of the angle A O E. But it will also tend to turn the eye upward with a force proportioned to M E, the sine of the angle A O E. As the angle A O E is increased, its sine increases, while its cosine diminishes. If the displacement were through 90 degrees, bringing the insertion of the internus to B, the cosine of the angle becoming zero and the sine equal to the radius, the full force of the internus would be exerted in turning the eye up.

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* Read in the Section on Ophthalmology of the American Medical Association, at the Fifty-sixth Annual Session, July, 1905.

The eyeball and the recti muscles are not suspended freely in the orbit, so that neither rectus can have its insertion displaced laterally until it can replace in function one of the other recti muscles. Still, they are each capable of sufficient lateral displacement to give very important practical aid in the correction of strabismus. Each muscle lies embedded in tissue from its origin to its insertion. Its sheath is more or less closely connected with adjoining tissues throughout. Still, the tissues surrounding the muscles are comparatively soft and yielding, and the adhesions of its sheath have little more power to prevent its lateral displacement than to prevent its advancement or retraction. Moreover, the form of a rectus muscle is distinctly favorable to lateral displacement. Starting from a comparatively narrow tendon of origin, it broadens to a comparatively wide (8 to 12 mm.) tendon of insertion; and within the limits of this breadth of insertion it is capable of almost free lateral displacement.

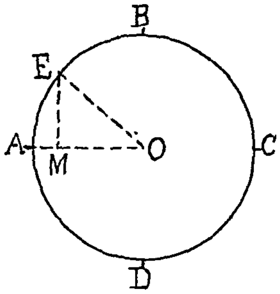

Figure 1.

Let Fig. 2 represent the origin of the rectus muscle and B C its insertion. In its normal condition we may regard the force of the muscle as exerted at the middle point D of the insertion. But if the whole insertion be divided except at the point B, and the tendon of the insertion gathered together so that the force of the muscle will be exerted at that point, the effect will be equivalent to that of a lateral displacement, by half of the width of the tendon of insertion. The form assumed by the muscle will be approximately that shown in Fig. 3.

The alteration of functions of the recti muscles by lateral displacements is favored by the fact that under normal conditions the function of each of the recti muscles varies with the direction in which the eyeball is turned. For instance, with the eye turned strongly inward, the superior and inferior recti come to the assistance of the internus and aid in convergence. With the eye turned strongly outward, they lose all tendency to turn the eye inward and may even aid divergence. Since the superior and inferior recti thus normally become adductors or abductors of the eyeball, it is possible to alter their function by lateral displacement without seriously disturbing muscular co-ordination and control.

The two ways in which I have accomplished lateral displacement of the tendon insertion are partial tenotomy and complete tenotomy, with suture of the tendon to the site of desired insertion. The latter will not be dwelt on here, as I have described[1] it at length in reporting two cases in which lateral displacement of the superior rectus was done for the relief of paresis of the superior oblique.

PARTIAL TENOTOMY.

The division of the tendon begins at one edge of the insertion and extends beyond the middle. To have very much effect, almost the whole breadth of the insertion must be divided. But sufficient tissue should be left to keep the uncut side of the tendon perfectly firm. Any giving of the undivided margin, either at the time of operation or subsequently under inflammatory changes, will diminish the lateral displacement and give somewhat the effect of a setting back of a tendon as by ordinary tenotomy. Therefore, in making this kind of a partial division of the tendon, the whole tendon should be raised on the strabismus hook and drawn on so that the operator will know just how far the firm tissue of the tendon extends.

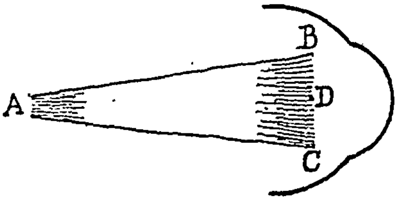

Figure 2.

I have practiced lateral displacement by a partial tenotomy on the superior and inferior recti muscles chiefly for the correction of excess of convergence. Partial tenotomy may be done as the sole operative procedure. For this purpose an incision is made over and parallel to the nasal margin of the superior rectus tendon, 5 or 6 mm. long and commencing 3 mm. back from the cornea. Through this incision a strabismus hook of medium size is to be introduced, passed beneath the tendon, and drawn on until the temporal margin of the tendon is well defined. Small, blunt-pointed tenotomy scissors are then introduced between the strabismus hook and the sclera, with one point behind and the other in front of the tendon, and so much of the insertion as may be desired is divided.

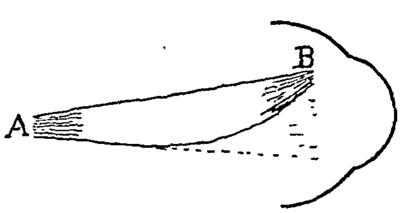

Figure 3.

The lateral displacement produced will be greater if the nasal margin of the tendon is "stripped" for 8 or 10 mm. back from its insertion. "Stripping" is done by passing the point of the strabismus hook backward from the insertion, alternately over and beneath the margin of the tendon; and by using the points of the scissors in a similar manner and snipping any adherent lateral bands.

A similar incision is then to be made along the nasal border of the inferior rectus tendon and the same operation repeated on it. Both the superior and the inferior tendons must be laterally displaced at the same operation; and generally to an equal extent, although for vertical strabismus or hyperphoria the displacement may be made unequal.

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[1] Ophthalmic Review, March, 1903.

This operation, successfully done, is followed by no diplopia, and by no more reaction than ordinary complete tenotomy. As with other muscle operations, the extent of the hemorrhage and the inconvenience it may cause vary and can not be exactly foreseen. My experience with this form of operation, done alone, is too small to estimate the extent of its influence. But it has proved a satisfactory adjunct to advancement of the opposing muscle.

EXTENDED TENOTOMY.

Lateral displacement of the tendon insertions of the superior and inferior recti in connection with tenotomy of the internus is an effective and reliable operation. The unsatisfactory results obtained by complete tenotomy for high degrees of convergent squint were early noted and commented on. One of the early operators, Phillips, beside dividing the tendon, separated the eyeball from all overlying tissue on both sides of the tendon, and thus undoubtedy encroached on the nasal margin of the superior and inferior tendons. It was said that he obtained satisfactory results in cases that other operators failed to relieve. Velpeau mentioned this practice, with approval based on his own experience. But it seems never to have secured general recognition as an established procedure. Phillips said he sometimes extended his incisions so as to include one-third of the surface of the eyeball. But this would probably involve only a minor part of the width of the superior and inferior tendons; and the lateral displacement thus secured would be but slight. However, the practice was attended by no disastrous results, such as followed repeated tenotomies or the division of the internus too far back.

The operation that I have practiced begins with a complete tenotomy of the internus. Ordinarily for tenotomy of the internus I make the conjunctival incision radiate from the center of the cornea. For this operation, however, I prefer a rather long incision, 10 mm., almost parallel to the corneal margin and slightly in front of the insertion of the internus. Through this the internus is divided at its insertion in the ordinary manner. A strabismus hook of moderate size is then entered at the upper angle of the conjunctival incision, and carried in close contact with the sclera and cornea backward and upward beneath the tendon of the superior rectus. The tendon being well raised on the hook and its temporal margin (that is, its margin of firm tissue) clearly recognized, the scissors are introduced and the nasal one-half to three-fourths of the tendon divided at its insertion. More than one-half of the tendon must be divided to get any decided effect, and the care before mentioned must be exercised to leave at least 2 mm. of the firm portion of the temporal edge of the tendon still attached. Before introducing the strabismus hook the points of the scissors may be used to divide the tissues about the nasal margin of the superior tendon; and before cutting that tendon the hook may be pressed back along the edge of the tendon, as before described, to free it from attachments. This "stripping" of the edge of the tendon may be carried back one-half inch or more from the insertion.

The making of the conjunctival incision approximately parallel to the corneal margin renders it comparatively easy to do conjunctivally the partial tenotomies of the superior and inferior recti from the upper and lower angles of the incision. To prevent falling of the caruncle after such an incision, however, it is well to dissect the overlying tissue rather freely from the tendon of the internus before cutting that tendon; and to complete the operation by bringing together the conjunctival wound by a suture. The after-treatment is similar to that of a simple advancement operation.

It will be noted that this operation produces not simply a lateral displacement of the tendon. As regards the contracted nasal margin of the muscle, it gives the backward displacement of the insertion such as is produced on the muscle as a whole by the ordinary tenotomy. The results to be obtained by this operation may be illustrated by a single case:

Mr. C. P., aged 27, gave the following history: His eyes began to get crossed when he was about 7 years old. At first it was entirely intermittent, but it became more frequent; and when he was 10 or 11 years old it became constant. He was going to school during that time. The strabismus continued slowly to increase until the age of 18 or 20. Since that time he thought there had been no change in it. He had never noticed diplopia.

The amount of squint varied from 80 to 100 centrads (45 to 60 degrees) or fully 10 mm. The inner margin of the cornea was concealed behind the folds at the inner canthus in both eyes at the same time. Either eye was used habitually, the right only to fix objects to the left of the median line, and the left only to fix objects to the right of the median line. The carrying of the object across the median line to the distance of 10 degrees, either way, invariably caused a change of fixation from one eye to the other. Still, by covering the other eye, either could be made to turn out beyond the median line. The vertical movements were fairly executed. There was constant moderate nystagmus. The eye-grounds were good. The correcting lenses and vision obtained with them were: Right eye + 2. ○ + 2.25 cyl. ax. 60° = 4/9 partly. Left eye + 1. ○ + 2.25 cyl. ax. 120° = 4/12 partly.

Under cocain, with the assistance of Dr. E. W. Stevens, I did the operation above described on the left eye, dividing the nasal two-thirds or three-fourths of each tendon (about 7 mm.) at its insertion. This was followed by notable increase in the freedom of outward rotation. The conjunctival opening was closed by two sutures.

At the end of 30 hours all dressings were discontinued. The convergence remaining amounted to 50 centrads (30 degrees). But there was marked increase in the range of movement for both eyes.

At four days the stitches were removed. They had caused no irritation. The convergence now remaining was 35 centrads (20 degrees). There was marked improvement in the fixation of both eyes, there being now quite a field in which either eye could fix, making it a true alternating strabismus.

On the twenty-sixth day it was possible to obtain binocular diplopia, and with prisms of 36 centrads bases out, the Maddox rod showed equilibrium. At this time the patient used the eye that had been tenotomized, almost to the exclusion of the other; although it had vision of only 4/12 partly and the other had vision of 4/9 partly. This was evidently due to the greater ease with which the left eye was moved. When he was required to fix something requiring his best vision he would by movements of the head bring the right eye into use.

The next day the right eye was operated on in a similar manner, dividing the full two-thirds of the tendons of the superior and inferior recti from the nasal side. The conjunctival stitches were removed on the second day, with over 20 centrads (12 degrees) of convergence still remaining. During the succeeding two weeks the convergence gradually lessened, and at the end of that time the eyes were mostly parallel for distant vision, although they still showed excess of convergence for near vision. By this time he was able to fix with either eye, and was beginning to show a preference for the right eye, which had the better vision.

The cure seems permanent, but full binocular vision has not been obtained. Although diplopia is readily excited, it seems to give him no annoyance when the visual axes are allowed to deviate inward during near vision.

At the close of the first operation of this kind it was entered in the case record: "The operation was not difficult and not much more painful than an ordinary free tenotomy. It was less serious than an advancement." This was held true equally of subsequent operations. The ensuing reaction and disturbance have not been greater than after the simplest advancement operations. This case was operated on in August, 1899. Five years later the result remained unchanged. In none of the few cases on which the operation has been done has there been any unfavorable result, either at the time of operation or subsequently.

It might be feared that such extensive division would be followed by protrusion of the eyeball. I have seen quite notable protrusion after what seemed to be a badly performed tenotomy, but nothing of the kind after the operation just described.

In September last I operated on Mrs. H. for convergence of 80 centrads and upward, reducing it to 10 or 15 centrads (6 or 8 degrees) by one operation. This included complete tenotomy of the internus, division of the nasal three-fourths of the superior and inferior recti tendons, and advancement of the externus. She was watched from day to day for protrusion of the eyeball; and neither immediately after the operation nor at any subsequent period was there a perceptible increase in the prominence of the operated eye. In every case the total mobility of the eyes has been increased by operation.

The number of cases in which I have advised and performed these operations is small. But I am certain that they constitute a valuable addition to our operative resources for the treatment of strabismus.

DISCUSSION.

Dr. G. C. Savage, Nashville, Tenn., considered Dr. Jackson incorrect in his statement that, when a muscle is displaced to the line of attachment of another muscle, the former will perform the function of the latter. Suppose the internus is made to take the place of the externus; when the convergence impulse is sent down, the left eye will turn in and the right will sweep out. Suppose, again, that the right externus is made to take the place of the right internus; the neuricity from the fourth conjugate center will cause the left eye to go toward the right and the right eye to go toward the left. The impulse determines which way the eye will turn.

There are two doors to the house of trouble. The first is labeled "a complete tenotomy." The other is marked "displaced attachment when there was no cyclophoria." Just as certain as one makes a marginal tenontomy, when there is not cyclophoria, the patient and the operator, said Dr. Savage, get into the house of trouble. When a muscle is displaced by advancement, unless there is cyclophoria, surgeon and patient get into trouble. When there is a cyclophoria it is a mistake not to do a marginal tenotomy. Dr. Savage said that in 1890 he pointed out the dangers of advancements, the danger of getting the attachment too high or too low and causing a cyclophoria. He said that the operation which Dr. Jackson described should be done in suitable cases, those cases have cyclophoria or cyclotropia. There are curable cases of squint that can not be cured by simple tenotomy; for these cases have cyclotropia. Until they are measured to determine which part of the tendon to divide and which not, the patient will not get well. There can be no question that in some cases marginal tenotomy is indicated and that in others it is not; some cases in which the weaker muscle may be advanced and its attachment displaced, and in others in which, if that is done, the patient is made a thousandfold worse.

Dr. Edward Jackson said that he does comparatively few muscle operations of any kind. The operation described has not been done on patients that possessed binocular vision or who have been capable of developing it. There has been absolutely no trouble from "rotation" of the eye ball. It is possible that this has been avoided by operating on both the superior and inferior muscles at the same time. In the cases alluded to, published in the *Ophthalmic Review*, there was, as part of the paresis of the superior oblique muscle, a distinct tendency to rotation which the operation corrected. Dr. Jackson remarked that the points that he wanted to make were that the internus is not the sole adductor and the externus is not the sole abductor. In cases of high convergent strabismus he believes that the inner portion, the nasal portion of the superior and inferior recti muscles, afford quite as great an obstacle to the proper turning of the eye as the internus itself. He has not only done this operation, but he knows of two instances in which Dr. Stevens of Denver has done it with complete satisfaction. He reported his first case in detail because it has now been six years; and five years after the operation the result was practically the same as shortly after it. He believes that the bad ultimate results from tenotomies, which we still see, are not due to the fact that complete tenotomy is not a proper operation, but to the fact that it is not applied properly, or is applied to cases that should not be subjected to it.

SYMPATHETIC INFLAMMATION FOLLOWING PANOPHTHALMITIS.*

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PHILADELPHIA.

Until within a comparatively recent period in the history of sympathetic inflammation it had been held that eyes which had been the seat of purulent panophthalmitis did not excite sympathetic inflammation. In 1876, Alt, as a result of original observation and a survey of the literature of the subject, stated that panophthalmitis was among the conditions found in the exciting eye. Notwithstanding this, some authors, among them Fuchs, consider phthisical globes (sequel of panopthalmitis) harmless, and make a distinction between such eyes and atrophied globes (sequel of plastic uveitis).

Knapp states that after panophthalmitis "the eye shrinks, but will remain free from irritation without jeopardizing the integrity of the fellow eye." Treacher Collins says of the inflammation in the exciting eye that it is always of a seroplastic and not of a suppurative type.

Schirmer, in 1900, stated that he had found uveitis purulenta present in only two of twenty-one exciting eyes, and had collected nine instances in 100 exciting eyes. He says that he uses the term "uveitis purulenta" designedly, as the classical picture of panophthalmitis was present only in a minority of the reported cases, whereas the clinical diagnosis had been panophthalmitis. In his own cases the microscopic examination showed that the purulent inflammation was not of the severest type, as the retina and choroid were completely preserved in the posterior segment of the globe and showed changes such as we are accustomed to find in plastic uveitis. He further says that, while he could not assert that sympathetic ophthalmitis can not occur after severe panophthalmitis, it must, in all events, be of extraordinary rarity.

Ruge, as a result of laborious investigations undertaken to determine whether a difference in type exists between exciting and non-exciting idiopathic or traumatic uveitis, asserts the correctness of Schirmer's findings and concludes that true purulent panophthalmitis *never* induces sympathetic ophthalmitis.

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* Read in the Section on Ophthalmology of the American Medical Association, at the Fifty-sixth Annual Session, July, 1905.

In 1904, Ahlström reported a case in which these conditions were associated and takes issue with both Schirmer and Ruge, as he thinks that in every panophthalmitic eye that is not enucleated within a short time of the beginning of the disease there is practically the same picture that these authors saw, and he believes it to be the expression of the termination of purulent panophthalmitis.

I have succeeded in finding the records of fifteen cases of panophthalmitis followed by sympathetic inflammation. In eight of these there is an anatomic description of the eye. In five there is also a report of the microscopic findings. In three the data are insufficient for a critical consideration.

In the first of Schirmer's cases, an insect had flown into the left eye, causing an inflammation which became progressively worse until, when seen by Schirmer two months from onset, panophthalmitis had developed. About three weeks subsequently the eye was enucleated. Eleven weeks later sympathetic inflammation occurred.

In the second case, the eye became inflamed as a complication of measles. Panophthalmitis followed a perforating ulcer of the cornea. Sympathetic inflammation took place four months later. In both cases the choroid and retina were well preserved in the posterior segment of the ball, whereas the iris and ciliary body were highly disorganized. The changes in the choroid were those of a plastic inflammation. It was greatly thickened and contained nests of mononuclear round cells within the stroma and relatively intact capillary walls.

In Gunn's first case, panophthalmitis occurred on the fourth day after the operation of cataract extraction, and sympathetic inflammation followed ten weeks later. The exciting globe was shrunken and there was a slightly vascular cicatrix corresponding to the operation wound. Above this there was a small, round, fleshy swelling in the conjunctiva. Anatomic examination revealed great thickening of the sclerotic and of the uveal structures. The retina was indistinguishable, and the center of the globe was occupied by tough fibrous tissue, in which was imbedded several calcareous particles. The microscopic description is that of a fibrino-plastic inflammation.

In a second case by Gunn, the operation for cataract extraction, one year previously, was followed by late panophthalmitis. The date of the onset of the sympathetic inflammation was unknown. The result of the cataract operation had been bad at the time. The exciting eye was panophthalmitic, with gaping wound through which the iris protruded. Pathologic examination of the excised eye showed great thickening of choroid and iris. A pea-sized cavity, probably formed by the detached retina, was filled with a red fluid containing shreds of a purulent appearance. There were purulent remnants of the vitreous body.

Three cases of suppurating iridocyclitis following cataract extraction, with sympathetic inflammation as a sequel, are reported by Millis. In but one of these is there a reasonable certainty that there was actual panophthalmitis. Sympathetic inflammation occurred seven weeks after the extraction. There are no pathologic data.

Bickerton's case was one of perforating wound in the ciliary region, followed in three days' time by panophthalmitis. Sympathetic inflammation occurred ninety-seven days after the injury, and there were four distinct attacks. The pathologic notes are that there was a small, shrunken stump about the size of a small marble.

In the case reported by Deutschmann (case of Weiland), sepsis and panophthalmitis followed a mastoid operation. There was phthisis bulbi without previous perforation of the globe. Eight months later sympathetic inflammation developed. The cornea and sclera were greatly and to an equal degree thickened. The choroid was atrophied and the ciliary body thickened. The retina was totally detached. The vitreous was dragged forward into the lenticular fossa. Microscopically the cornea was vascular but intact, and there was round-cell infiltration of the lamella. The anterior chamber contained fibrous exudate, mixed with round cells. Round-cell infiltration of the iris and ciliary body was present. There was atrophy of the choroidal body in various stages of degeneration. The folded lens capsule was attached anteriorly to the iris and ciliary body by an infiltrated fibrous tissue composed of the vitreous. The retina was attached, in part, to the vitreous mass by fibrous bands. The choroid was infiltrated by round cells. *Staphylococcus pyogenes* was present.

Scheffel's case resembled the above case. Following choroiditis metastatica postmeningitiden, the globe became shrunken one half. Scheffel states that, owing to the accepted view that, after panophthalmitis, sympathetic inflammation is scarcely to be feared, enucleation was not performed. Sympathetic ophthalmitis occurred two months from the onset of the inflammation.

In Ahlström's case there was an infected traumatic ulcer of the cornea. This was cauterized and a punctiform paracentesis performed. There resulted an adherent leucoma, possibly of a fistulous type. There was bilateral dacryocystitis, for which the sacs were enucleated. The eye did well for four months, when it became inflamed. When Ahlström again saw it there was a subsiding panophthalmitis, with two scleral perforations. The excised ball measured 18x19 mm. and its form was well retained. The inner coats of the eye were almost completely destroyed. There were remnants of the ciliary body and of the choroid. The latter for a short distance above the nerve head. A granulation polyp extended from the purulent vitreous to the perforation in the sclera, through which it projected. Microscopically the picture was one of a purulent destruction of the intraocular tunics. Numerous colonies of cocci, presumably staphylococci, were found in the vitreous abscess and in the choroid.

In 1876 Alt tabulated the anatomic findings in 110 cases in which sympathetic inflammation or sympathetic irritation had been excited, and in his conclusions states that purulent panophthalmitis was found to be an exciting cause, and further states that, in thirteen instances of panophthalmitis purulenta, iridochoroiditis was induced in the sympathizing eye. From a careful examination of the abstracts given in this exhaustive résumé, and where possible of the original records, it was found that of these thirteen instances in all but two (Justi and Packer) the inflammation was described as either of a plastic or a purulent type, or there were changes present which result from plastic inflammation.

In the oft-cited case of Lawson, the globe was shrunken one-third, the greater part of the cornea was occupied by a cicatrix. T.— =2. Sympathetic ophthalmia followed the wearing of an artificial eye. This was probably the remains of an eye once the seat of a mixed type of inflammation.

In Craig's case there was a history of a panophthalmitis five years previously, following a perforating ulcer of the cornea. The globe was phthisical. Vision in the fellow eye had been failing for one year. There was slight ciliary injection. Total posterior synechia; shallow anterior chamber and T=+1. The nerve was atrophic and showed pathologic cupping. Iridectomy was done. Two weeks later the eye was quiet and tension normal. From the symptoms and behavior of the eye under iridectomy this may be considered a doubtful case of sympathetic inflammation.

My own case is as follows:

M. K., aged 70, was first seen at St. Mary's Hospital on April 1, 1902, when an examination showed in the right eye an immature cataract in an otherwise apparently healthy eye. In the left eye there was an incipient cataract. The fundus showed no gross changes. The patient returned in September, 1904, with a mature cataract. The candle field was good. The patient was frail and poorly nourished. There was neither albumin nor sugar in the urine. The cataract was extracted October 1. An upward section with a small conjunctival flap was made with difficulty, owing to the globe being deep set. The lens could not be made to present and was removed by the wire loop. The eye was examined at the end of twenty-four hours, at which time there was undue corneal haze. On the sixth day the cornea had cleared except for the persistence of a striated keratitis. When again seen by me on the eighth day the cornea wound was infiltrated with pus. The lips of the wound were thoroughly cauterized with the actual cautery, and iced compresses and iodoform were used. These measures having failed to arrest the suppurative process by the end of forty-eight hours, all the involved tissues were again cauterized. Notwithstanding this panophthalmitis followed with only moderate proptosis and edema of the lids. Enucleation was again and again advised but refused, and after an eight week's stay in the hospital she was discharged with a shrunken, tender globe.

December 8 she returned to the hospital, stating that for the past five days the fellow eye had been annoying her, and that the sight had been growing dim. There was a marked uveitis with exudate in the pupillary space and adhesions of the iris to the capsule of the lens along the lower pupillary margin. She absolutely refused to have the shrunken ball removed or to have the inflamed eye treated. She was not seen again for one week's time, when she presented herself at my service at the Wills Eye Hospital, willing this time to submit to enucleation. The sympathizing eye was markedly congested, the pupil small and vision reduced to finger counting. The shrunken globe was at once enucleated and active measures instituted to control the inflammation in the left eye. Inunctions of mercury and salicylate of soda, after the method of Gifford, with milk punches, were employed. After three weeks of this treatment some improvement was noted, but the patient failed rapidly in strength and was very much depressed mentally. Relapses in the condition of the eye occurred and in the early part of January she suddenly became blind. She was removed from the hospital a few days later and died two weeks subsequently.

The pathologic study was made by Dr. Edward A. Shumway, whose report follows:

"The eyeball is in a state of well advanced phthisis bulbi, its antero-posterior diameter (in section) measuring only 16 mm. and its transverse diameter 20 mm. The globe is distorted and sclera thickened, and the cornea flattened. The lens is absent and the entire eyeball is filled with cellular exudate.

"Microscopically: The cornea is almost entirely replaced by connective tissue, which contains many blood vessels and much round cell infiltration. The surface epithelium is thickened and irregular, sending inshots of cells into the tissue beneath, and in places is absent over a considerable area. There has been a perforation at the center, and Descemet's membrane is curled up back of the cornea. There is no trace of the lens except for the capsule, which is imbedded in a thick mass of organizing exudate, which presses up against the posterior surface of the cornea. The iris and ciliary bodies are entirely destroyed and can be recognized only by the clumped masses of pigment with which the cellular mass is infiltrated which fills up the interior of the eyeball, and is being converted into organized tissue. To some extent this mass is composed of pus cells. These are particularly prominent on one side in the neighborhod of the ciliary body, and from here a purulent collection surrounds and infiltrates the processes. Elsewhere and in the position of the choroid, the inflammation has more of a plastic character, the cells being mononuclear in type; with them are many endothelial cells, and in certain localities, especially in the posterior half of the eyeball, a great many giant cells (Fig. 1). In the tissue there is no evidence of caseation and hence the process is not to be considered tubercular. These giant cells have been long known and well described, especially by Krause, Axenfeld, Schirmer and others. The cellular mass representing the choroid is separated from the sclera, as the result of the shrinking of the tissue in the interior of the eyeball, and the space thus left is filled with a moderately cellular exudate which is also being organized, and contains numerous fine capillaries. The retina is almost completely destroyed, only traces of it remaining. The vitreous is occupied also by an exudate which contains comparatively few cells but a large amount of fresh blood. It shows also well advanced organization, fine connective tissue processes running in every direction, accompanying newly formed capillaries. The older blood vessels throughout the eyeball show marked changes; their walls are thickened, the cells of the intima are proliferated, and many of the vessels in the choroid are completely obliterated. The ciliary nerves in the thickened sclera are surrounded by dense mantles of round cells, but outside of the sclera they do not show the condition to as marked a degree. The optic nerve is moderately infiltrated, but the chief excess of cells is in the intervaginal space, especially at their blind extremities within the sclera. Here there is a pronounced proliferation of the endothelial cells, and also many infiltrating round cells.

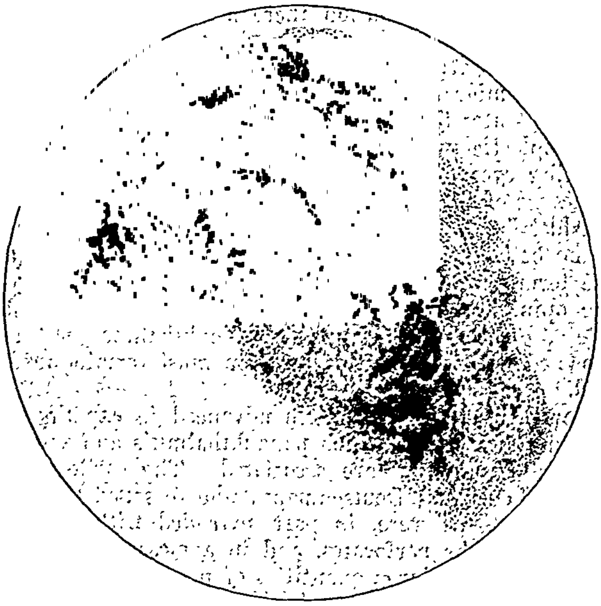

Fig. 1.—Giant cells occurring principally in posterior segment of eyeball.

"The examination, therefore, shows that the contents of the eyeball has been destroyed by a purulent inflammation (panophthalmitis), which has evidently spread from the anterior segment, from the perforated cornea, and has been succeeded by a plastic form of inflammation, with the production of many giant cells, and the proliferation of the endothelial cells of the tissue. This tissue is now going on to the formation of connective tissue, which is causing shrinking and distortion of the eyeball.

"There is a moderate neuritis, but a more marked perineuritis, and an infiltration of the ciliary nerves. This description is very like the usual findings in eyeballs which have been removed on account of sympathetic inflammation, and supports the view of Schirmer, that in cases of panophthalmitis which have caused sympathetic inflammation there is probably a mixed infection and a combination of plastic with the purulent inflammation."

I am indebted to Dr. Harold G. Goldberg, curator and pathologist to Wills Hospital, for the preparation of the specimens for microscopic study.

I believe that in some of these cases, i. e., Gunn's second case and Ahlström's case, where the original insult to the eye had been of the nature recognized as being prone to excite sympathetic inflammation and where the usual period of incubation had elapsed, it may safely be questioned whether the panophthalmitis should be held accountable. The absence of microscopic study in many of these cases makes it impossible to determine whether the cases were true instances of purulent panophthalmitis.

The microscopic findings in Schirmer's cases lead him to believe that in panophthalmitic eyes which excite sympathetic inflammation there is a mixed infection; that, besides the pus exciters, the bacteria of chronic fibrinous uveitis entered, survived, further developed, and then migrated to the other eye.

Ruge states that these cases present the evidence of a fibrinoplastic uveitis analogous to the findings in other exciting eyes, and that this chronic inflammation was the cause of the sympathetic inflammation.

Ahlström is not prepared to accept this explanation, as he believes that these changes are an expression of the termination of a purulent inflammation and is of the opinion that so long as our search for a specific microörganism of sympathetic ophthalmia is not crowned with success this question must remain unsettled.

Several theories have been advanced to explain the extreme rarity with which panophthalmitis and sympathetic inflammation are associated. The earliest was that of Leber and Deutschmann, who reasoned that the microörganisms were, in part, extruded with the pus when the globe perforates, and in a measure rendered harmless by the large quantities of pus. Gifford found in experimentally produced panophthalmitis, blocking of the lymphatics as the result of inflammation, and considered that this offered a mechanical obstruction to the migration of the organisms.

Schirmer's explanation is that it is due to the fact that panophthalmitic eyes contain only the microörganisms of suppuration, and that these are incapable of migration, and that where the mixed infection does occur the exciters of pus, being the more virulent, overcome and destroy the other organisms.

CONCLUSIONS.

1. While the occurrence is one of extreme rarity, eyes that present the clinical picture of panophthalmitis may excite sympathetic inflammation.

2. Such eyes, however, usually present microscopic changes analogous to those found in other exciting eyes.

3. With few exceptions in the cases in literature of sympathetic inflammation following phthisis bulbi, the eyes were of the class described by Fuchs as atrophied eyes.

4. Usually it is, clinically, the mild form of purulent uveitis which excites.

5. It is only after panophthalmitis of a virulent type that the resultant shrunken globe should be considered harmless.

6. Where from the nature of the infection the panophthalmitis has been of a low grade, or where as a result of treatment the inflammation has not assumed a virulent type, the eye should be considered a dangerous one and should be enucleated.

7. That in some cases where the purulent panophthalmitis has been considered the exciting cause the original injury or disease may have been responsible.

8. Whether the histologic findings in most panophthalmitic eyes are to be considered the terminal stage of the inflammation or the evidence of a mixed infection is still undecided, but the evidence points strongly to the correctness of the latter assumption.

9. Several factors contribute to render panophthalmitic eyes innoxious. When the globe perforates many of the microörganisms are extruded along with the pus, those retained within the globe becoming inactive through the enormous pus formation. This active pyogenesis, by blocking the posterior lymph spaces, serves to prevent migration of the toxic agents. Finally, the panophthalmitis may have been excited by organisms probably incapable of inducing sympathetic inflammation, such as staphylococci, streptococci and pneumococci.

DISCUSSION.

Dr. E. V. L. Brown, Chicago, said that Dr. Zentmayer did not make clear the significance of the giant cells; they are not supposed to have any relation to tuberculosis in sympathetic ophthalmia.

Dr. J. Hirschberg, Berlin, said that the giant cells are to be found in almost every clear case in which one eye has been perforated and there is sympathetic ophthalmia in the other. The nature of sympathetic ophthalmia is not known, but if we carefully examine the anatomic condition of the exciting eye we find a great similarity to tuberculosis, though not being tuberculosis; and if we carefully examine the ophthalmoscopic condition of the sympathized eye we find a very close resemblance to the syphilitic appearance, but it is not syphilitic.

Dr. William Zentmayer read Dr. Shumway's conclusions to show that the report speaks of the fact that the giant cells could not have been tuberculous because of other microscopic conditions associated with tuberculosis. As to Professor Hirschberg's remarks on the early signs of sympathetic trouble, Dr. Zentmayer said that they could not be determined in this case because the patient remained away from the hospital until an ophthalmoscopic examination was impossible.

ANAEROBIC CELLULITIS.*

J. CLARK STEWART, M.D.
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Following this a certain amount of bacteriologic research was attempted, but nothing definite was accomplished until Pasteur,[2] in 1877, published his work, in which he described the *vibrion septique* and showed its relation to certain forms of septicemia in animals.

Next, in 1883, Trifaud[3] demonstrated a similar organism in some cases of fulminating gaseous gangrene, and in 1885 Chauveau and Arloing[4] established the identity of this germ with the *vibrion septique* of Pasteur.

Although Pasteur's *vibrion septique* has been shown to have been in all probability an impure culture of the bacillus of malignant edema, the majority of modern French authors still ascribe cases of gas infection to this germ, although A. Ricard[5] admits that other bacteria may cause the same clinical picture.

It remained for an American, William Welch, in 1891, to isolate the now generally accepted cause of gas infection, the *Bacillus aerogenes capsulatus,* or *Bacillus welchii* as it has been named in his honor. In 1892 Welch and Nuttall[6] reported a case in which Welch's bacillus was isolated from the body of a man dying from the rupture of an aortic aneurism.

E. Fraenkel[7] seems to have independently described the same bacillus and demonstrated its causal relation to gaseous septicemia.

In August, 1893, the first American case corresponding to the description of the French authors was reported by Graham, Steward and Baldwin,[8] in which, after an abortion, fatal emphysematous septicemia occurred, and the *Bacillus aerogenes capsulatus* was recovered in pure cultures from the blood after death.

In a later article by Welch and Flexner[9] twenty-three cases of various forms of infection by the gas bacillus were detailed, and since this time a rapidly increasing series of cases have been reported by various observers, quite a number of which have terminated in recovery under appropriate surgical treatment.

Bloodgood[10] gave a résumé of cases reported up to that date, omitting puerperal cases. From fourteen published cases and eight unpublished from Dr. Halsted's service at John's Hopkins he draws valuable conclusions as to diagnosis and treatment. Welch,[11] in a most complete article on morbid conditions caused by the *Bacillus aerogenes capsulatus,* discusses forty-six cases of gaseous cellulitis. Bloodgood[12] adds seven cases to those discussed in 1899.

To this list I am able to add six cases from literature and two from personal experience, making a total of sixty-one cases, not more than three of which can be questioned either as not being cellulitis, or because the bacteriologic findings are not sufficiently accurate.

I present here the cases which include all that I have been able to find in the literature at my command: Mann,[13] 1 case; Welch and Flexner,[9] 6; Martin,[14] 1; Bloodgood,[10] 6; Welch reports 2 cases of his own, unpublished, 1 unpublished of Flexner, and 3 unpublished of Carroll; E. Fraenkel,[7] 4; Passow,[15] 1; Dunham,[16] 5; Ferguson,[17] 1; Erdmann,[18] 1; Le Boutillier,[19] 1; Love and Cary,[20], 1; Norris,[21] 1; Hitschmann and Lindenthal,[22] 5; Thorndike,[23], 2; Muscatello,[24] 3; Guillemot,[25] 1; W. Southey Wright,[26] 1; Gildersleeve,[27] 1; B. F. Curtis,[28] 1; J. B. Roberts,[29] 1; George Heaton,[30] 1; L. M. Loeb,[31] 1; Jacobson,[32] 1; Cole,[33] 1; Gould,[34] 1; Rizzo,[35] 1; Sappington,[36] 2; Mann 1, quoted by Welch and Flexner,[9] p. 20 (not included in their 6).

CASE 1.—Capt. W., aged 71, of Wayzata, Minn., came under my care March 16, 1903, for retention of urine due to stricture aggravated by exposure to cold.

History.—Before reaching Minneapolis, he had been relieved by the suprapubic aspiration of forty ounces of bloody urine. Perineal section was done and bladder drained. At the same time a small region of urinary extravasation around the suprapubic puncture was incised. In spite of this early incision an extensive spreading cellulitis of the abdominal wall was set up, which proved obstinate to the treatment instituted, of free incision and hot antiseptic packs. On the sixth day, a marked extension of the abdominal process toward the right side was noticed, and for the first time crepitation of the swollen tissues was observed. An incision was made five inches beyond the former ones, and a peculiar gelatinous condition of the subcutaneous tissues found, there being also considerable fluid and many bubbles of gas.

Bacteriologic Examination.—Cultures were taken at this time and site, which showed *Bacillus aerogenes capsulatus* in pure culture, while those from the older lesions showed also staphylococci.

Treatment.—Extensive parallel incisions were made through the whole swollen area and about two inches beyond in all directions down to the muscles. This striping was about two inches apart, and reached from the ninth rib above to below the line of the iliac crests below, and extended from the axillary line on the left to the backbone on the right. All these strips were separated as far as possible from underlying tissues, freely irrigated with H_2O_2 isolated by wet gauze strips and the whole covered by hot, wet, sterilized dressings.

Result.—Under this treatment, the septic process made no further progress, the sloughs gradually separated, leaving nothing between the bared muscles and the skin; and within six weeks the patient was practically well.

Remarks.—It may be of interest to note that there was no marked change in the patient's condition synchronous with the onset of the gas infection. His general condition at that time was extremely bad, with low delirium and a running pulse, while his temperature did not vary much from the 100 degree mark. The crepitation of the tissues at a point far distant from the extravasation cellulitis was the only diagnostic point. Apparently the gas infection began some

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[2] Charbon et Septicæmie, Bull. de l'Acad. de Méd., 17 jul, 1877.

[3] Rev. de Chir., 1883, p. 776.

[4] Bull. l'Acad. de med., 1885, p. 604.

[5] Traite de Chir. le Dentu and Delbet, 1896.

[6] Welch and Nuttall: Bull. Johns Hopkins Hosp., 1892, No. 3, p. 81.

[7] E. Fraenkel: Centralb. f Bakter, 1893, xiii, p. 13; Ueber gas phlegmon, 1893, Hamburg and Leipzig.

[8] Graham, Steward and Baldwin: Columbus Med. Jour., 1893, xii, p. 55.

[9] Welch and Flexner: Jour. Exp. Med., 1896, i, p. 5.

[10] Bloodgood: Progressive Medicine, December, 1899, iv, p. 158.

[11] Welch: Johns Hopkins Bull., September, 1900, p. 185.

[12] Progressive Medicine, 1901.

[13] A. H. Mann, Jr.: Ann. of Surg., 1894, xix, p. 187.

[14] Martin: University Bulletin, 1896, No. 3.

[15] Passow: Charité Ann., 1895, xx, p. 275.

[16] Dunham: Bull. Johns Hopkins Hosp., 1897, viii, p. 68.

[17] Ferguson: Trans. Ind. Med. Soc., 1897, p. 339.

[18] Erdmann: Med. Record, Feb. 5. 1898.

[19] Le Boutellier: Med. Record, March 5, 1898.

[20] Love and Cary: Med. Record, April 8, 1899.

[21] Norris: Am. Jour. Med. Sci., February, 1899, p. 172.

[22] Hitschmann and Lindenthal: Sitzungbd d. k. Acad. d. Wiss. Mathch., 1898, cviii, No. 3, p. 67.

[23] Thorndike: Boston Med. and Surg. Jour., June 7, 1900. p. 592.

[24] Muscatello: Riforma Med., 1900, ii, p. 508-530.

[25] Guillemot: Compte rend. Soc. de Biol., 1898, x, p. 1017.

[26] Wright, W. S.: Lancet, Aug. 13, 1898.

[27] Gildersleeve: Med. Record, March 4, 1899.

[28] Curtis, B. F.: Ann. of Surgery, October, 1900.

[29] Roberts, J. B.: Ann. of Surgery, October, 1900.

[30] Heaton: Lancet, 1899, i, p. 898.

[31] Loeb: Am. Med., July 27, 1901.

[32] Jacobson: Am. Med. Compend., Toledo, October, 1901, xvii, p. 603.

[33] Cole: Bull. Johns Hopkins Hosp., 1902, xiii., p. 234.

[34] Gould: Annals of Surgery, October, 1903.

[35] Rizzo: Arch. Internat. de Chir., 1903, No. 2.

[36] Sappington: New York Med. Jour., 1904, p. 641.

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J. CLARK STEWART, M.D.
Professor of Principles of Surgery University of Minnesota.
MINNEAPOLIS.

The various septic processes associated with the formation of gas in the tissues have always been of the greatest interest to surgeons, both on account of their comparative rarity and of the certainty and horrible rapidity with which, when untreated, they terminate life.

These morbid processes were observed and studied by even the oldest medical authors as Hippocrates and Ambrose Paré, but little was done toward the elucidation of their etiology or even the careful study of their symptomatology until the middle of the nineteenth century, when the French authors Chassaignac, Maisonneuve, Velpeau, and finally Salleron,[1] gave masterly descriptions, the latter's based on sixty-five cases observed during the Crimean War.

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* Read in the Section on Surgery and Anatomy of the American Medical Association, at the Fifty-sixth Annual Session, July, 1905.

[1] Arch. de Medic Milit, 1858, vol. xxi, p. 300.

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To this list I am able to add six cases from literature and two from personal experience, making a total of sixty-one cases, not more than three of which can be questioned either as not being cellulitis, or because the bacteriologic findings are not sufficiently accurate.

I present here the cases which include all that I have been able to find in the literature at my command: Mann, [13] 1 case; Welch and Flexner,[9] 6; Martin, [14] 1; Bloodgood,[10] 6; Welch reports 2 cases of his own, unpublished, 1 unpublished of Flexner, and 3 unpublished of Carroll; E. Fraenkel,[7] 4; Passow,[15] 1; Dunham,[16] 5; Ferguson,[17] 1; Erdmann,[18] 1; Le Boutillier,[19] 1; Love and Cary,[20], 1; Norris,[21] 1; Hitschmann and Lindenthal,[22] 5; Thorndike,[23], 2; Muscatello,[24] 3; Guillemot,[25] 1; W. Southey Wright,[26] 1; Gildersleeve,[27] 1; B. F. Curtis,[28] 1; J. B. Roberts,[29] 1; George Heaton,[30] 1; L. M. Loeb,[31] 1; Jacobson,[32] 1; Cole,[33] 1; Gould,[34] 1; Rizzo,[35] 1; Sappington,[36] 2; Mann 1, quoted by Welch and Flexner,[9] p. 20 (not included in their 6).

Case 1.—Capt. W., aged 71, of Wayzata, Minn., came under my care March 16, 1903, for retention of urine due to stricture aggravated by exposure to cold.

History.—Before reaching Minneapolis, he had been relieved by the suprapubic aspiration of forty ounces of bloody urine. Perineal section was done and bladder drained. At the same time a small region of urinary extravasation around the suprapubic puncture was incised. In spite of this early incision an extensive spreading cellulitis of the abdominal wall was set up, which proved obstinate to the treatment instituted, of free incision and hot antiseptic packs. On the sixth day, a marked extension of the abdominal process toward the right side was noticed, and for the first time crepitation of the swollen tissues was observed. An incision was made five inches beyond the former ones, and a peculiar gelatinous condition of the subcutaneous tissues found, there being also considerable fluid and many bubbles of gas.

Bacteriologic Examination.—Cultures were taken at this time and site, which showed *Bacillus aerogenes capsulatus* in pure culture, while those from the older lesions showed also staphylococci.

Treatment.—Extensive parallel incisions were made through the whole swollen area and about two inches beyond in all directions down to the muscles. This striping was about two inches apart, and reached from the ninth rib above to below the line of the iliac crests below, and extended from the axillary line on the left to the backbone on the right. All these strips were separated as far as possible from underlying tissues, freely irrigated with H_2O_2 isolated by wet gauze strips and the whole covered by hot, wet, sterilized dressings.

Result.—Under this treatment, the septic process made no further progress, the sloughs gradually separated, leaving nothing between the bared muscles and the skin; and within six weeks the patient was practically well.

Remarks.—It may be of interest to note that there was no marked change in the patient's condition synchronous with the onset of the gas infection. His general condition at that time was extremely bad, with low delirium and a running pulse, while his temperature did not vary much from the 100 degree mark. The crepitation of the tissues at a point far distant from the extravasation cellulitis was the only diagnostic point. Apparently the gas infection began some

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days after the urinary extravasation and operation, as no gas was seen until the eighth day of disease, or the sixth day after the urethrotomy. The seat of gas cellulitis was quite distant from the urinary extravasation, and the gas bacillus was found there in pure culture, although the suprapubic cellulitis was undoubtedly an ordinary pus infection. The process certainly did not begin in the perineal urethrotomy wound, as this remained healthy throughout without swelling or sloughing.

Bacteriologic Report.—Cultures were made by Dr. S. M. White of the University of Minnesota, Pathological Department, with the following results: "Anaërobic cultures yield a short, thick bacillus, often with square ends, usually single, occasionally growing out into short chains, non-motile, retains stains by Gram, and stains by ordinary basic dyes. It does not form spores, at least not under ordinary conditions. It forms a heavy granular deposit in glucose broth within 24 hours, and grows in small round colonies in glucose agar shake preparations. Gas formed in one instance in glucose agar. Inoculated intravenously into rabbits which are then killed after 30 minutes and incubated 24 hours, an abundant formation of gas takes place, especially in the liver. Fifteen c.c. broth culture did not kill rabbits. No other bacteria are present in the cultures from new incisions. From older areas the gas bacillus was found mixed with staphylococci.

Case 2.—Mr. W., Jew, married, aged 27.

History.—While on duty as private watchman he was shot December 11, 1904, at 2 a. m., receiving a pistol wound in the left thigh. He was brought to the City Hospital at once, and the house surgeon thoroughly cleansed the wound and applied an antiseptic dressing. The patient rested well during the night, and when I first saw him on rounds in the morning he presented no disturbance of any sort. The first dressing was, therefore, left in place and the wound was not disturbed until the next morning, about 30 hours after the injury. At that time, he showed a rise of temperature to 100.5, with a pulse about 90, much restlessness and anxiety. He also stated that he had been unable to sleep during the night on account of pain about his wound. He was taken to the dressing room and the wound was examined. There was found a bullet wound about one inch below the center of Poupart's ligament, around which there was some slight swelling and dusky redness. A large sterile bullet probe was introduced and a few bubbles of gas escaped from the deeper part of the wound. He was at once ordered to the operating room, but as another operation was in progress, a delay of about two hours was necessary. During this time some of his friends removed him to a private hospital, where he passed into the hands of another surgeon, who later in the day operated, making simply a counter opening for drainage and removal of the bullet; there was no attempt at free incisions through the infiltrated area. After operation his temperature was 101 degrees, pulse 90, respiration 28, and he complained of thirst, severe pain in his hip and thigh, and was apparently unable to sleep. He was very pale and weak, too weak to be restless. On December 13, his condition became gradually worse. He became weaker, dying on December 15 at 2 a. m., seemingly in a state of profound toxemia.

Appearance of Body.—For an area of four inches around the wound of entrance the skin was brawny red, congested and tense, and from about five inches above Poupart's ligament all along down the leg and to the toes the subcutaneous tissue became emphysematous, gas being distinctly palpable, but there was no discoloration of the skin. From the incisions for drainage came a bloody serous discharge and much gas of a foul cooked blood and hydrogen disulphid odor. Streptococci were found in fresh smears and also an unknown bacillus.

Autopsy.—From the records of the Pathological Laboratory of the University of Minnesota, by the courtesy of Professor F. F. Wesbrook.

No postmortem was permitted, but we were allowed to obtain material for bacteriologic examination. The left leg was considerably swollen and emphysematous throughout, this emphysema extending for a distance of about three inches above Poupart's ligament. There were three openings. The first was situated on the anterior aspect of the limb about one inch below the center of Poupart's ligament, and was somewhat irregular, evidently the wound of entrance. The second was situated immediately over the region of the great trochanter. The third was situated on the outer surface of the thigh about the junction of the middle and lower thirds. The two latter were apparently for drainage. From all three, a serous fluid with bubbles of gas could be expressed. Fluid for bacteriologic examination was taken from three sources: (1) the wound of entrance; (2) the lower drainage opening; (3) an opening made in the anterior surface of the thigh about the center of the middle line.

Bacteriologic Findings.—(Material obtained nine hours after death.) Direct smears gave the following results:

1. From the wound of entrance a mixture of streptococci and a large bacillus, roundish ends, apparently with a capsule was taken.

2. From the lower drainage wound and opening made in anterior surface of thigh a pure culture of a bacillus resembling morphologically that found in wound of entrance was isolated.

Cultures.—Sowings were made into glucose broth, on glucose agar, blood serum and litmus lactose agar. These were grown both aërobically and anaërobically. These grown aërobically gave an apparently pure culture of streptococcus pyogenes from wound of entrance. Inoculations from the other two sources showed no growth. Those grown anaërobically showed a spore-bearing bacillus easily stained with simple anilin dyes and retaining the stain by Gram's. The organisms resemble to a certain extent *B. anthracis*, but are somewhat stouter and are more variable in length. Some appear as diplococci, others are chains of various lengths, as many as fifteen elements being observed in one chain. The ends are roundish, but in the chains they are more or less square. They produce a diffuse cloudiness with a slight sediment in broth. On slant agar, the colonies are difficult to describe, being scarcely visible to the naked eye. Glucose agar is fermented, the amount of gas being apparently great. Litmus lactose agar is also fermented and with an acid reaction. The organism killed a guinea pig in forty-eight hours. Two rabbits, animal experiments Nos 318 and 358, showed apparently no effect. A rabbit, animal experiment No. 357, inoculated intravenously and killed within five minutes, after being placed in incubator for eighteen hours, was greatly distended. Postmortem showed gas bubbles abundant in the subcutaneous tissue and muscles of the belly wall. The same phenomena were observed in the liver, spleen, kidney and heart wall, but were most pronounced in the liver. Smears from each of these organs and from the heart's blood showed the organism above described in great abundance. In smears of the heart's blood, capsules were demonstrable. Inoculations into sugar media with heart's blood gave the same results as those obtained from original material.

Bacteriologic Diagnosis.—*B. aerogenes capsulatus* (Welch).

Quoting largely from Welch and Bloodgood, and adding the eight new cases, the points of interest can be summarized as follows: The sex of the patients shows the usual preponderance of males in all diseases largely dependent on traumatism; 48 males to 11 females, with sex not given in two cases. In over 80 per cent. one of the extremities was the seat of the disease, and in all but seven, traumatism or surgery preceded the onset of the disease. The 61 injuries are itemized thus:

Compound fractures	23
Bullet and shot wounds	7
Infusion of salt solution	3
Hypodermic injections	2
Ligation of artery for aneurism	4
External urethrotomy	3
Submaxillary abscess	2
Traumatic rupture of rectum	1
Appendectomy	1

Prostatic abscess	1
Herniotomy	1
Nephrectomy	1
Severe lacerated wounds	2
Spontaneous gas gangrene	4
Spontaneous general emphysema	2
After erysipelas	1
Unexplained	3

The mortality in the 61 cases was a little over 55 per cent. Of 18 compound fractures 8 patients died and 10 recovered after amputation. Of 7 bullet and shot wounds 4 patients died and 3 recovered with and 2 without amputation. Of 3 patients after external urethrotomy 2 died and 1 recovered. This corresponds closely to the general mortality of the whole 61 cases and excluding several of Welch's patients dying of pus infection and tetanus after apparent recovery from gas infection, the average death rate in surgical cases would seem to be about 50 per cent.

ETIOLOGY.

In regard to the etiology of gas infection, Welch has shown that the bacillus is very widely distributed in nature, being especially common in soil, hospital dust and intestinal contents, hence its more frequent occurrence in compound fractures, dirty wounds and operations about the gut and perineum. Its occurrence after operations on the urinary tract, such as urethrotomy and nephrectomy, must be explained as due to accidental contamination by gut contents as the bacillus has not as yet been found in the urine before death. Welch and Bloodgood, however, both seem to favor the probability of the bacteria being carried to the seat of infection in some cases by the blood, as Gwyn[37] has demonstrated their presence in the blood of the living patient.

According to Welch, it is extremely improbable that clinical gas infection is due to other germs than the *Bacillus aerogenes capsulatus*. The bacillus of malignant edema has been reported as causing fatal infection in man, but without gas production. A few cases have been ascribed to the colon bacillus, as case reported by Rizzo,[35] and to the *Bacillus proteus*; but the reports do not show that either anaërobic methods of culture or the inoculation of animals were attempted, so the proof of diagnosis is insufficient, especially in view of Lanier's work. The latter has demonstrated an aërobic form of the gas bacillus which closely resembles the colon bacillus and might be easily mistaken for it.

Certain German workers have made extensive studies which tend to show that the gas bacillus is at least closely related to the bacillus of butyric acid fermentation, so it is probable that the last word has not been spoken in regard to the bacteriology of this class of diseases.

SYMPTOMATOLOGY.

Not much has been added to the descriptions of the older authors, of whom Maissonneuve and Pirogoff give especially full details. The latter,[38] in 1864, described two varieties of gaseous gangrene: First, cases in which gas forms within forty-eight hours and the tissues become gangrenous and melt away without local inflammatory reaction, while the patient becomes early collapsed, anxious, sweating and dies within a few days; and, second, cases in which the local reaction is marked, the course of the disease slower, and in which there is marked fever and the other ordinary symptoms of severe infection. The symptoms noted in the cases listed above have been quite varied and, on the whole, have not been striking, the one constant and diagnostic sign having been the presence of gas in the tissues or in the wound secretions, occurring from the eighth hour to the sixth day. Other symptoms noted have been rarely a chill, regularly a fever ranging from 100 to 104 degrees in the different cases, rapid running pulse, delirium in many cases; locally gas in the tissues surrounding the point of entrance, gas in wound secretions, fetid or stinking odor to discharge and incised tissues, frothy, brownish discharge of horrible odor, dusky redness of the skin followed in some cases by the ordinary color changes of gangrene; general emphysema of extensive areas, sometimes of whole body, explosive escape of gas from tissues when incised, and immense production of gas in all parts of the cadaver after death.

There seems to be much difference of opinion as to whether pure infection by the gas bacillus is more malignant than a mixed infection. Muscatello[24] and Gangitano believe that the mixed infections are the most virulent, and even claim that the gas bacillus is unable to exert any pathologic action on healthy tissues; while Hitschmann and Lindenthal take exactly the opposite view, stating that the pure infections are most virulent; and Welch, while admitting extreme virulence in certain cases of mixed as well as in pure infections, positively contradicts, from experimental experience, the statement that the gas bacillus can not attack healthy tissues. A study of some of the recent cases would suggest that, like tetanus, the relative virulence of this disease in any given case may be indicated by its early development, that is, that cases developing gas symptoms slowly should give the better prognosis.

DIAGNOSIS.

The one diagnostic sign is the presence of gas in the tissues and the presence of the bacillus in smear preparations from the wound, in fact, the latter should be given precedence, as one or two observations establish the fact that this germ may live for some time in a wound without producing gas.

All suspected wounds, therefore, should be subjected to this amount at least of bacteriologic study.

TREATMENT.

All contaminated wounds should be thoroughly cleansed and disinfected, best by carbolic acid, followed by alcohol; although this did not prevent gas infection in one case reported by Bloodgood. As soon as diagnosis is made, by microscope or clinically, the seat of infection should be laid widely open by multiple incisions, and then treated by continuous bath or by irrigation, hydrogen peroxid and wet dressings. When the lesion is confined to an extremity, the consensus of opinion seems to favor early amputation, although the results of conservative treatment seem to indicate that many limbs may be saved by its adoption. The recovery in my case of gas cellulitis in a not robust man of 71, the treatment being merely the very thorough carrying out of the ordinary treatment of any diffuse cellulitis, would suggest that the rather difficult treatment by continuous bath advocated by Blodgood may be dispensed with in some cases. How much the use of H_2O_2 can prevent the growth of an anaërobic bacterium is a matter for speculation; theoretically, it would be indicated locally in this disease, as in tetanus.

CONCLUSIONS.

1. Gas bacillus infection, while not a common disease, demands the attention of all surgeons because, while regularly fatal when untreated, its early diagnosis is

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[37] Bull. Johns Hopkins Hospital, 1889, p. 134.

[38] Pirogoff: Grundzuege de allgem. Kriegschirurgie, p. 867-1006, Leipzig.

easy and its successful treatment requires only the prompt and thorough application of well-established surgical principles.

2. Either removal of entire disease by amputation or thorough exposure of its site to air and drainage seem the essentials to be attained.

3. Free incisions, the continuous bath, or irrigation and wet dressings, have afforded the best results, and theoretically hydrogen peroxid is indicated.

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Special Article

IMMUNITY.

CHAPTER XXII (Concluded).

TYPHOID FEVER.

Proliferation of Endothelial Cells.

Mallory has given a histologic explanation of certain gross and microscopic changes which characterize typhoid fever, the essential feature of which is a massive endothelial proliferation in the lymphoid organs (Peyer's patches, solitary follicles, mesenteric lymph glands, spleen and bone marrow). It is thought that this process explains in part the enlargement of the lymphoid organs. The cells are phagocytic, and especially in the lymphoid tissue of the intestines and in the mesenteric lymph glands, englobe and destroy the lymphoid cells on a large scale. A similar proliferation of the endothelium of the perivascular lymph spaces and vessels occurs. The proliferated masses undergo necroses, the lymph vessels become occluded and the process, accompanied by fibrin formation, extends to adjacent blood vessels, causing thrombosis of the latter. The death and sloughing of the lymphoid patches is the direct result of this thrombosis, the process being aided by mixed infection with the intestinal bacteria.

Endothelial proliferation in the spleen and bone marrow is of a similar order, and in these organs the cells show their phagocytic properties by ingesting large numbers of erythrocytes. Emboli are formed in the hepatic lobules by the endothelial cells, which are carried from the spleen to the liver through to the portal circulation, a process which results in the small islands of necrosis (focal necrosis) so often found in typhoid livers (Mallory.) It seems probable that the endothelial proliferation which has been described is due to the rather mild but prolonged action of the dissolved toxic constituents of the typhoid bacillus; the condition is that of an inflammatory hyperplasia. The greatest changes take place in the organs (lymphoid) which contain the bacilli most constantly and in the greatest numbers. It is here that the toxic substance may be present in greatest concentration, as a consequence of the continual solution of the organisms. It has been suggested that the hypoleucocytosis of typhoid fever is due to the destruction of the lymphocytes in the lymphoid organs by the endothelial phagocytes.

Granular and fatty degenerations of the parenchymatous organs occur, but these changes are common to many infectious diseases, the mechanism by which they are produced being unknown.

Mixed Infections.

The conditions in the intestinal tract would seem to favor mixed infections, especially by the colon bacillus and streptococcus, and the primary infection probably decreases the resistance to secondary invasion. The rôle of the colon bacillus in typhoid fever is perhaps not definitely established, although it has been found in the circulation, in abscesses, and in the urine in cases of cystitis accompanying the disease. The typhoid and colon bacilli grow well together. A mixed general infection with the streptococcus causes a grave septic condition characterized by an irregular temperature curve. This condition may be discovered by blood cultures. It is thought that the streptococcus does not increase the toxicity of the typhoid bacillus, the result being rather a summation of the intoxication of the two infections. Post-typhoidal suppurations are often due to the streptococcus and in many of the metastatic complications (parotitis, pleurisy, peritonitis, meningitis, otitis media) streptococci and staphylococci have been found. Pneumococcus pneumonia not infrequently complicates typhoid fever. A combined infection of typhoid and malaria is said to occur in the tropics; the complication is grave. Typhoid and diphtheria may occur together, and typhoid may be superimposed on acute tuberculosis.

Immunity and Susceptibility.

The period of greatest susceptibility to typhoid is found from the fifteenth to the twenty-fifth years. The resistance of infants and children is not satisfactorily explained. A certain amount of resistance inherited from the mother may persist for some years after birth. It is known that antibodies may pass from the mother to the fetus through the placenta. In very early life the tissues may respond more energetically to incipient infection by the rapid formation of typhoid antibodies, or the phagocytic cells may be more active. The conditions which render older people less susceptible are no better understood. A loss of suitable receptors may have occurred so that the toxic constituents of the bacilli find no anchorage in the body, or the affinity between the receptors and the toxic constituents may have become less. The individual during the course of years may have been gradually immunized by the entrance of nonpathogenic quantities of the bacilli into the circulation. That resistance to typhoid infection is decreased by low nutrition and overwork is a long-known fact.

Natural and Acquired Immunity.

Natural immunity, to a certain degree, is dependent on the hydrochloric acid content of the gastric juice, and it is reasonable to believe that suppression or an insufficient amount of hydrochloric acid may favor the passage of living bacilli to the intestines. The typhoid bacillus is more resistant to the gastric secretion than the vibrio of cholera. Normal human serum is rather strongly bactericidal for the typhoid bacillus. Metchnikoff ascribes natural immunity to the action of the microphages.

The immunity which follows an attack of typhoid fever is generally of long duration, but second attacks occur with some frequency. It has been noted that limited communities which have experienced an epidemic may remain relatively free from the disease over a period of some years, although neighboring districts are attacked. All the susceptible persons having had the disease, a state of temporary regional immunity is created. Acquired immunity of this type is characterized by the appearance of bactericidal amboceptors, agglutinins and typhoid precipitins in the serum of the individual. It is commonly believed that recovery is due to the increase of the bactericidal power of the body fluids, which becomes most marked during the later period of the disease or during convalescence. It seems certain, however, that the new resistance persists beyond the time when the bactericidal power of the serum has returned to normal, which may take place in from one to several years. The bactericidal power sinks rapidly during and following convalescence. However, the general principle is well established that, although the antibodies may have disappeared entirely, they are formed anew much more readily as a consequence of an old infection. This phenomenon was demonstrated in one instance by Neisser and Shiga in relation to typhoid. The tissue cells have, so to say, been trained, and are stimulated by a few micro-organisms to produce such a quantity of bactericidal amboceptors, that the incipient infection is overcome. It is, of course, understood that the amboceptors require the aid of complement in killing the micro-organisms. A second attack of typhoid fever usually is mild.

Metchnikeff does not deny that the amboceptors (fixators) play an important part in acquired immunity, but claims that the new resistance depends chiefly on an increase in the phagocytic power of the microphages (polymorphnuclear leucocytes). This is not clear from the clinical standpoint because of the hypoleucocytosis which is somewhat characteristic of typhoid—a hypoleucocytosis caused chiefly by a disappearance of the microphages. It has been suggested that our conclusions as to hypoleucocytosis are based on examination of the peripheral blood, whereas the mesenteric vessels may show hyperleucocytosis. Mallory, however, found a striking absence of microphages even in the intestinal vessels. Concerning a theory that the hyperplasia of the lymphoid organs serves as a substitute for the hyperleucocytosis, we may recall the findings of Mallory that this hyperplasia is chiefly one of endothelial cells. The importance of these endothelial cells for the destruction of typhoid bacilli needs further investigation.

Prophylaxis.

Prophylaxis should begin with the thorough disinfection of the stools and urine of typhoid patients, and should continue until they no longer contain typhoid bacilli. Strictly speaking, it is not in conformity with good hygiene to discharge a patient until bacteriologic examination of stools and urine show them to be free from the organisms. It would be difficult to carry out this rigid precaution under all conditions of practice, but at all events the stools and urine may be disinfected for a reasonable period, say throughout convalescence. There is no sufficient reason for the neglect of the bacteriologic examination in hospital practice. There is a growing sentiment that typhoid patients in hospitals should be isolated in wards or rooms in which there is a fixed routine for the disposal of infectious materials—urine stools and sputum. Soiled linen, the bath water of typhoid patients, the remnants of food and drink, and the eating utensils should be disinfected before removal from the room. Nurses or attendants should not eat or drink in typhoid rooms.

Hexamethylenamine.

The value of hexamethylenamine in causing the disappearance of bacilli from the urine is now well known, and the advisability of using the drug as a routine measure for public safety is worthy of consideration. The room should be kept free from flies and eventually it should be disinfected, preferably by formalin. During an epidemic, in case the water supply of a community is susceptible to contamination, all water used for drinking, washing of vegetables and eating utensils should be boiled, and that used for general cleaning may be otherwise disinfected. The possibility of dust infection of a house should not be disregarded.

Vaccination.

There are two methods of specific prophylaxis against typhoid: 1, The injection of antityphoid immune serum; 2, preventive inoculation with killed cultures of the bacilli. Antityphoid serum confers a fairly strong and immediate immunity which, however, is of short duration, because of the rapid elimination of the serum. Its use as a general preventive, therefore, is not advocated.

Wright's Method and Results.

Wright has been the most influential factor in showing the utility of protective inoculations against typhoid. His first experimental work was published in 1896. Since that time the inoculations have been carried on extensively in British regiments in India and South Africa. In the statistics which have been collected the occurrence of typhoid among the individuals inoculated was one-half that among the uninoculated. The inoculations reduced the mortality of the disease by one-half. The protection, so far as known, lasts for two or more years, although in some instances infection has occurred in from three to six months after vaccination.

The Vaccine.

The methods of preparation of the vaccine are elaborate in order to insure sterility and standardization. Cultures of the bacillus are grown in nutrient broth for from twenty-four to forty-eight hours, and then sterilized at 60 C. The contents of several flasks are mixed in order to obtain a uniform distribution of organisms, and standardization is then accomplished by a convenient method of estimating the number of bacilli in a cubic centimeter of the vaccine. The purity of the vaccine is insured by bacteriologic tests, and for preservation carbolic acid or lysol is added.

Effects.

Wright has abandoned his original method of giving a single injection and now recommends two moderate doses, which are given from eight to fourteen days apart. The first dose includes a quantity of vaccine which contains from 750,000,000 to 1,000,000,000 of bacilli, the second 1,500,000,000 to 2,000,000,000. Wright finds that "the inoculation of these quanta induces an ample elaboration of antitropic substances (antibodies) without producing any severe constitutional reaction." We need not here enter into a consideration of Wright's nomenclature. The inoculations increase the bactericidal and agglutinating powers of the serum; it is concluded that an increased resistance to typhoid intoxication is established because the second injection causes milder symptoms than the first and the phagocytic powers of the leucocytes is raised, because of an increase in the "opsonic antitropins" (Chapter XVI). The curve of the antibodies is like that obtained in general by active immunization with bacteria, toxins or other substances. Immediately following the inoculation there is a decrease even of the normal antibodies in the individual's serum. This "negative phase" lasts for from one to several days and corresponds to a period of increased susceptibility. It is quickly followed by a positive phase in which the antibodies and correspondingly the resistance increase rapidly. When very small doses are administered the positive phase may be recognized after twenty-four hours (Wright). Large doses cause a prolonged negative phase and are to be avoided.

Local Reactions.

General Reaction.

Following injection, "the local symptoms first make themselves felt after an interval of two or three hours. The effects then seen are the development of a red blush and more or less serous exudation at the site of inoculation, followed by some lymphangitis along the lymphatics which lead, according as the vaccine has been inoculated above or below the middle line of the trunk, in the direction of the glands of the axillæ or of the groin. . . . Even severe inflammation has never led on to suppuration." The exudate is somewhat hemorrhagic, and the pain moderate to severe, but not of long duration. Pain is relieved by hot application or inunction with a carbolic acid ointment which contains ergot. With the technic as recommended at present, "the constitutional symptoms are limited to some headache and to two or three hours of real malaise. . . . The next day his temperature comes down to normal, and he feels comparatively well except in respect to pain at the seat of inoculation."

Conditions for Vaccination.

The statistics warrant the adoption of antityphoid inoculation or vaccination under certain conditions. Its utility in the army has been demonstrated, and probably will be carried out in future campaigns among educated nations. Typhoid never has been a world pest, hence the occasion for universal vaccination does not exist, but in the presence of epidemic so frequently seen in American cities it will be impossible to avoid the consideration of vaccination as a means of protecting the uninfected. The question may be worthy of consideration also in those cities in which typhoid is so extensive as to be called endemic. The procedure is absolutely safe and the results speak for a high grade of effectiveness.

Mixed Active and Passive Immunizations.

It has been suggested that the "negative phase" described above is a source of danger in the presence of an epidemic. The phase is of so short duration, however, that the danger is minimal. It seems probable that the practice of mixed active and passive immunization would eliminate it entirely. This is accomplished by the combined injection of antityphoid serum and vaccine. The serum assures a positive phase from the start, and before this has subsided, that induced by the vaccine is established. When specific serum is mixed with the vaccine the local action is said to be less severe.

The products of autodigestion of typhoid cultures have been suggested as suitable vaccine (Neisser and Shiga). The local reaction is said to be mild, and the body reacts by the formation of bactericidal amboceptors and agglutinins.

Therapy.
Serum

Bactericidal serums obtained by the immunization of horses with typhoid bacilli have not shown distinct curative properties. This subject was discussed in its theoretical aspects in Chapter XVIII. Chantemesse immunizes horses with a typhoid "toxin" which is prepared by growing the organism in a liquid culture which contains an emulsion of splenic tissue. One cubic centimeter of this toxin will kill a guinea-pig, a dose which in comparison with other bacterial toxins is very weak. Chantemesse has used his antitoxic serum in the treatment in more than 500 cases, reporting a mortality of about 6 per cent., whereas that among untreated patients was from 10 per cent. to 12 per cent. Although these figures indicate some value for the serum it has had little trial outside of France.

McFadyan and Rowland immunize horses with extracts of typhoid bacilli, which have been ground up while they were kept in a brittle state by the temperature of liquid air. Although antitoxic and bactericidal properties are claimed for the serum, there is no conclusive evidence that it differs from a bactericidal serum prepared in the ordinary way.

Preparation of Jez.

Jez produces a high degree of immunity in rabbits by artificial immunization with the typhoid bacillus, then prepares an extract from the spleen, bone marrow, brain, etc., of the immunized animals. The extract is administered by mouth. Jez justifies this method, from the fact that the lymphoid organs have been shown to form typhoid antibodies (Wasserman). From the clinic of Eichorst and some others favorable reports concerning the remedy have been published. It has had no extensive use. The preparation is made by the Serum Institute of Berne (Switzerland) and is expensive.

The suggestion made by Fraenkel, that typhoid patients be treated by subcutaneous injections of small quantities of killed typhoid bacilli in order to hasten the formation of antibodies has been kept alive through the "typhoin" of Petruschky, but is yet without much practical trial.

Agglutination.

The principles and technic of the agglutination test were described in Chapters X and XI. It is sufficiently well known at the present time that the test is a strong corroborative diagnostic sign of typhoid fever, to which there are, however, certain limitations and sources of error. The serum commonly becomes agglutinative on from the seventh to the tenth day, rarely as early as the second or third, and as late as from the twentieth to the fortieth day. The power is highest during convalescence, when it may agglutinate in dilutions as high as from 1 to 5,000 or higher, and from that time sinks gradually. An agglutinating power of from 1 to 160 has often been found at eight months, and of from 1 to 50 after from seven and one-half to eleven years; but the latter duration is not the rule. In performing the test a serum dilution of not less than 1 to 40, or 1 to 50 should be observed as previously set forth.

The following points are to be borne in mind: Typhoid fever occasionally runs its course without the formation of agglutinins; the reaction may mysteriously be absent one day to recur a few days later, from which the importance of repeated tests becomes manifest in case a first test was negative; rather high agglutinating power for the typhoid bacillus occasionally develops in other infections, as pneumonia, meningitis, icterus, Weil's disease, etc.; the possibility of group agglutination, for the positive elimination of which control tests with related organisms may be demanded.

In case negative results are obtained in a suspicious case the reactions should then be tried with the paratyphoid bacilli.

The test of the bactericidal powers of the serum has been recommended as a substitute for the agglutination reaction, but the technic is so much more complicated that the method will probably not come into general use.

For diagnosis previous to the formation of agglutinins blood cultures should be made as described in a preceding paragraph.

Clinical Reports

INTESTINAL INDIGESTION IN AN INFANT FROM HAM RIND.

BLANCH N. EPLER, M.D.
KALAMAZOO, MICH.

Patient.—A child, aged 2 years, a patient of Dr. Della Pierce, had complained of vomiting, abdominal pains and diarrhea for two days.

History.—There was a history of an intestinal indigestion and slight fever of several days' duration. The mother stated that during this time the child passed large pieces of "curd" in the stools.

Course.—The symptoms abated with treatment, and several days later the child passed what the mother called a long, green worm. Recovery was rapid. The so-called worm certainly resembled one on gross inspection. It measured 8 inches and was flat, one side presenting a white curd-like appearance; the other a dull, green, slimy appearance. On careful examination, aided by the microscope and KOH, this substance proved to be the rind of ham or bacon, only slightly attacked by the digestive juices. This is a good example of what is to be expected in babies who are allowed to eat everything.

A CASE OF HYDROCEPHALUS AND ACRANIA.

A. E. ENGZELIUS, M.D.
DENVER, COLO.

The extreme rarity of the occurrence should justify the report of the following case of acrania:

History of Mother.—The mother, Mrs. H. G., aged 23, primipara, has never in her life been sick; she also enjoyed perfect health during the entire term of pregnancy. Delivery occurred on July 20, 1905, about a week later than expected. Fetal movements for the last week had been very feeble, if noticeable at all. On examination the day before labor, fetal heart sounds could not be heard, and palpation of the abdomen failed to elicit fetal movements. The patient, however, was in excellent health.

Labor.—Labor pains set in abruptly and were almost from the start continuous or with very brief intermissions. About three hours after beginning of labor the vagina was found to be filled by a "bag of waters" of unusually large size, through which the presenting part could not be palpated. Puncture of the bag effected during the height of a uterine contraction was followed by a discharge of a somewhat soft and anemic brain substance in considerable amount. This was followed by a very forcible expulsion of about a pint of serum. (The explosion was so forceful as to cause the liquid to spurt over my head and on to the wall behind me, a distance of several feet.) The fetus presented in L. O. A. position.

Description of Fetus.—The body and the face were perfectly developed. The anterior portion of the scalp was normal and thinly covered with hair. Posteriorly, from the level of the *foramen magnum* and continuous with the integument of the neck to the vertex of the skull, there extended, instead of integument, a thin, smooth, translucid and elastic membrane resembling a cyst sac. The occipital bone, both parietal bones and all of the vertical portion of the frontal bone, save an edge about three-eighths of an inch high, were lacking. In other words, the skull cap was entirely absent. The base of the skull was perfectly developed. An accumulation of serum had evidently occurred in the occipital region, behind the brain, and was covered in by the membrane, which, in this situation, was found to have taken the place of normal scalp tissue.

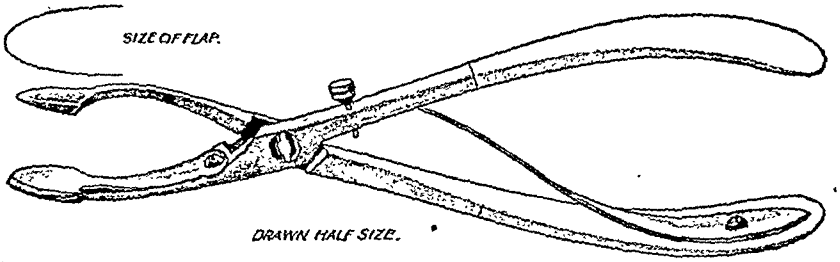
Remarks.—The etiology of this malformation is obscure. Delafield and Prudden[1] state it as probable that the accumulation of fluid is secondary to a primary partial anencephalia. Ziegler[2] quotes on the subject various and from each other widely differing opinions. By some acrania is regarded as due to an abnormal accumulation of fluid in the cerebral vesicles occurring before the fourth fetal month. Others oppose this view and believe the condition to be caused by a pressure from without exerted by the cephalic cap of the amnion, lying snugly against the cephalic bend and thus hindering the development of the cranium. Still another opinion looks for the cause in an abnormally sharp curvature of the body of the embryo, occurring where the cephalic end of the embryo has elongated abnormally, or the cephalic envelope has lagged behind in development. This sharp curvature would prevent the change of the medullary plate into the neural canal or cause the already formed canal to be destroyed. Ziegler remarks that many and various causes might very likely be in operation, and that in some instances the malformation must probably be ascribed to a primary agenesia already determined in the germ.

New Instrument

A NEW SEPTOTOME.*

WALTER A. WELLS, M.D.
Throat and Ear Surgeon, Garfield Hospital.
WASHINGTON, D. C.

This instrument is designed to be used as a substitute for the knife or scissors in cases of uncomplicated deviation of the cartilaginous septum. It cuts out of the cartilaginous portion of the septum a more or less tongue-shaped flap, and it accomplishes with a single incision at least as much as is done in the Asch operation with two separate incisions. Thus is overcome the necessity of removing one set of scissors to substitute another, which may prove a serious drawback in case *one is operating* on a nervous patient under a local anesthetic.



In the Asch operation, the result of the incisions is to create four small, triangular segments with their points in apposition, which means that we have four possible points of sloughing. With the septotome but a single flap is cut, and that having what many rhinologists consider the ideal shape of the flap for this operation; the chances for sloughing, therefore, ought to be decidedly lessened.

By means of a screw, the tongue-shaped flap may be shortened to any desired length; and the instrument is so constructed that the flap, when cut, is bent well to the other side, thus converting the two stages of the Asch operation into one. Moreover, I think a decided advantage is gained over the Asch instrument as regards the introduction of my septotome. There is no sharp point to become engaged in the tissues, as it is being introduced. It has a large and a small jaw, the former for the free side and the latter for the side obstructed. Even though one side of the nose be completely obstructed, the shape and size of the smaller jaw is such that it may be wedged in without any laceration of the tissues.

The object of the flat band of steel, which is attached to the larger jaw of the instrument, is that it will act as a spring and force back into the median line the flap which has been cut out of the septum, a very important provision to prevent its being caught by the instrument as it is being withdrawn.

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[1] Pathological Anatomy and Histology, fourth edition.

* Presented at Eleventh Annual Meeting of the Laryngological, Rhinological and Otological Society, Boston, 1905.

[2] General Pathology, American edition.

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A careful study of the tables will show that medical education has undergone many changes during the past year. The standards of preparation of study and of graduation have been raised considerably, showing that there is a disposition on the part of all concerned to elevate the standard of the profession by bringing into it men and women who are better prepared to practice medicine, and who will be a credit to the profession in every way. There has been a distinct gain in the entrance requirements during the past two or three years. This change for the better is due, in part, to a few individual colleges, but largely it is the result of concerted action on the part of several organizations which have it in their power to promulgate and enforce rules and regulations for the government of colleges. The state examining boards, in particular, have exercised a most wholesome influence by raising the requirements and by taking an active part in the regulation of preliminary or preparatory education.

Number of Medical Students.—The total number medical students (matriculants) in the United S for the year ending June 30, 1905, was 26,147, crease of 1,995 below the year 1904. Of this nu 24,119 were in attendance at the regular schools, 1 at the homeopathic, 578 at the eclectic, 114 at physiomedical, and 232 at the nondescript (unclas able) school. The attendance at the regular schc shows a slight increase—457—over that of last ye and a decrease—801—below 1903, and also a decrea —759—below 1902. In the homeopathic school there was a decrease of 205 below the attendance of 1904, 394 below 1903. In fact, the attendance at the homeopathic schools has been diminishing steadily since 1900. It was less last year than it has ever been since 1880. Up to the present year, the eclectic schools showed an increase in attendance since 1900. This year, however, the attendance fell to 578, 436 less than for 1904, and the lowest attendance since 1880. The attendance at the physiomedical schools has also fallen off a trifle. In 1904 the attendance at these three schools was 129. In 1905 it was 114.

Table of Medical College Attendance.

Year.	Regular.	Homeopathic.	Eclectic.	Physio-Med and Nondescript.	Total.
1880......	9,776	1,220	830	....	11,826
1890......	13,521	1,164	719	...	15,404
1900......	22,710	1,909	552	...	25,171
1901......	23,846	1,683	664	224	26,417
1902......	24,878	1,617	765	241	27,501
1903......	24,930	1,498	848	339	27,615
1904......	23,662	1,309	1,014	357	28,142
1905......	24,119	1,104	578	346	26,147

These figures tend to show that the attendance at the regular schools is increasing at the expense of that at the sectarian schools. It is evident that the raising of the entrance requirements has been a factor in the lessening of the number of matriculants.

Graduates.—The total number of graduates for the year ending June 30, 1905, was 5,606, a decrease of 141 below the preceding year and 92 below the year 1903. The lowest number of graduates since 1900 was 4,999, in 1902; the highest number was 5,747, in 1904. For the year just closed the percentage of graduates to matriculants was 21.4. For 1904 it was 30.3; for 1903 it was 22.8. The decrease in the number of graduates from the regular colleges in 1905 was 64; from the homeopathic colleges, 95. The number of graduates from the eclectic colleges is 7 greater than it was last year, and 9 in the case of the unclassified college. The graduates of 1905 from the homeopathic colleges have been fewer in number than in any year since 1880. The electic schools, on the other hand, graduated more students in 1905 than in any year since 1890.

Table of Medical College Graduates.

Year.	Regular.	Homeopathic.	Eclectic.	Physio-Med. and Nondescript.	Total.
1880......	2,673	380	188	..	3,241
1890......	3,853	[illegible]	221	..	4,454
1900......	4,715	[illegible]	86	..	5,214
1901......	4,879	[illegible]	148	..	5,444
1902......	4,498	[illegible]	[illegible]	27	4,999
1903......	5,088	[illegible]	[illegible]	41	5,698
1904......	5,190	[illegible]	[illegible]	40	5,747
1905......	5,126	[illegible]	[illegible]	51	5,606

Women in M [illegible] year 1,073 women were enga [illegible] 1 per cent [illegible] total [illegible] and 219 [illegible] per [illegible] th [illegible] be for some time, but was included in our last year's statistics as an active college. Of the total number of colleges, 126 are regular, 18 homeopathic, 9 eclectic, 3 physiomedical, and 1 unclassified. During the year 2 homeopathic colleges united, and 1 eclectic college changed its faith and is now teaching regular medicine. Six of the regular colleges listed in our tables did not confer degrees, teaching only the first and second years of the medical course. Three colleges (two regular and one homeopathic) are exclusively for women; 63 for men; 91 are coeducational (66 regular, 13 homeopathic, 8 eclectic, 3 physiomedical, and 1 unclassified college). There are five schools to which only colored students are admitted, two less than last year, one having become extinct and the other now admitting both white and colored students. Three schools operate under the continuous course system, the year being divided into quarters, and the student being allowed to attend only a specified number of quarters or semesters in each calendar year. These three schools are located in Chicago. Sixty-eight regular colleges, 4 homeopathic and 1 eclectic college has a university or literary college connection or affiliation. Only two colleges (located in Chicago) impart instruction exclusively in the evening, and three colleges have both day and evening classes.

Comparative Table of Medical Colleges.

Year.	Regular.	Homeopathic.	Eclectic.	Physio-Med. and Nondescript.	Total.
1880......	72	12	6	..	90
1890......	93	14	9	..	116
1900......	121	22	8	..	151
1901......	124	21	10	4	159
1902......	121	20	10	4	155
1903......	121	19	10	4	154
1904......	133	19	10	4	166
1905......	126	18	7	4	157

Seventy regular colleges are members of the Association of American Medical Colleges; 14 belong to the Southern Medical College Association; all the homeopathic colleges are recognized as in good standing by the college committee of the American Institute of Homeopathy, and all the eclectic colleges are members of the National Confederation of Eclectic Medical Colleges.

The comparative table of medical colleges shows that the raising of entrance requirements has been effective, in a measure, in reducing the number of colleges. In many of the colleges the number of students in attendance was so small that the college authorities were confronted with the necessity of either effecting an amalgamation with some other college or of passing out of existence. The expense of conducting an up-to-date medical college is greater than the income from a small number of students; hence, stockholders are confronted by an assessment levy which they have no desire to meet. On the other hand, college authorities are recognizing more and more the desirability, for the sake of improving medical education, of having fewer and better medical colleges.

Length of Terms.—Here, too, the upward tendency of educational matters is noticeable. Last year 56.8 per cent. of the colleges had terms of less than eight months' duration, whereas this year only 39 per cent. were in this class. Last year the number of colleges having a six months' term was 27 (16.3 per cent.), whereas this year there were only 15 schools (9.4 per cent.) Last year only 19 colleges (11.6 per cent.) had a session of nine months' duration. This year there were 38 colleges (24 per cent.)

Table of College Terms.†

	Schools.		Per cent.	
6 months................	(27)	15	*(16.3)*	*9.4*
7 months................	(44)	35	(27.0)	22.0
7½ months................	(22)	12	(13.5)	7.6
8 months................	(34)	46	(20.8)	29.0
8½ months................	(13)	10	(7.9)	6.1
9 months................	(19)	38	(11.6)	24.0
*10 months................	(4)	3	(2.4)	1.9

†Figures in brackets are for year 1904.
*Night schools.

Most of the colleges having six months' sessions are located in sections of the country where educators claim the educational facilities are such as to prohibit terms of longer duration. Most of the homeopathic and eclectic colleges have seven months' sessions. As we have pointed out before, the term "months" is exceedingly elastic. It always includes vacation periods. It is to be hoped that ere long this term will be discarded for "weeks." The college and state examining boards associations have substituted a requirement of thirty weeks, exclusive of holidays, for that of seven months. It is the equivalent of the old requirement of eight months. We have had no reason to change our opinion expressed last year that the ideal way of specifying the length of a college term is by requiring attendance in college for a definite number of hours in each subject taught.

Of the total number of matriculants, about 1.8 per cent. attended the night schools. About 24 per cent. attended colleges having sessions of nine months each. About 37.8 per cent. attended colleges having eight to eight and one-half months' sessions; 27.5 per cent. attended colleges having seven and seven and one-half months' sessions, while only 8.9 per cent. attended six months' sessions. Thus it will be seen that over one-half (61.8 per cent.) of the total number of students registered attended colleges whose sessions average from eight to nine months, whereas only 36.4 per cent. attended the short-term colleges. It is evident, therefore, that the length of the term does not sway the student in his selection of a college, because the majority of students attended the long-term colleges. Students are more and more taking into consideration the standing of the college and what it has to offer. Fees, entrance requirements and length of term are secondary considerations with the better class of students.

THE INFLUENCE OF THE PRIVATE PHYSICIAN ON MEDICAL EDUCATION.

The private practitioner, wherever located, is often likely to feel merely a remote interest in the great subject of medical education. He finished his own undergraduate medical education perhaps years ago, secured

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A careful study of the tables will show that medical education has undergone many changes during the past year. The standards of preparation of study and of graduation have been raised considerably, showing that there is a disposition on the part of all concerned to elevate the standard of the profession by bringing into it men and women who are better prepared to practice medicine, and who will be a credit to the profession in every way. There has been a distinct gain in the entrance requirements during the past two or three years. This change for the better is due, in part, to a few individual colleges, but largely it is the result of concerted action on the part of several organizations which have it in their power to promulgate and enforce rules and regulations for the government of colleges. The state examining boards, in particular, have exercised a most wholesome influence by raising the requirements and by taking an active part in the regulation of preliminary or preparatory education.

Number of Medical Students.—The total number of medical students (matriculants) in the United States for the year ending June 30, 1905, was 26,147, a decrease of 1,995 below the year 1904. Of this number 24,119 were in attendance at the regular schools, 1,104 at the homeopathic, 578 at the eclectic, 114 at the physiomedical, and 232 at the nondescript (unclassifiable) school. The attendance at the regular schools shows a slight increase—457—over that of last year, and a decrease—801—below 1903, and also a decrease —759—below 1902. In the homeopathic schools, there was a decrease of 205 below the attendance of 1904, 394 below 1903. In fact, the attendance at the homeopathic schools has been diminishing steadily since 1900. It was less last year than it has ever been since 1880. Up to the present year, the eclectic schools showed an increase in attendance since 1900. This year, however, the attendance fell to 578, 436 less than for 1904, and the lowest attendance since 1880. The attendance at the physiomedical schools has also fallen off a trifle. In 1904 the attendance at these three schools was 129. In 1905 it was 114.

Table of Medical College Attendance.

Year.	Regular.	Homeopathic.	Eclectic.	Physio-Med and Nondescript.	Total.
1880......	9,776	1,220	830	....	11,826
1890......	13,521	1,164	719	...	15,404
1900......	22,710	1,909	552	...	25,171
1901......	23,846	1,683	664	224	26,417
1902......	24,878	1,617	765	241	27,501
1903......	24,930	1,498	848	339	27,615
1904......	23,662	1,309	1,014	357	28,142
1905......	24,119	1,104	578	346	26,147

These figures tend to show that the attendance at the regular schools is increasing at the expense of that at the sectarian schools. It is evident that the raising of the entrance requirements has been a factor in the lessening of the number of matriculants.

Graduates.—The total number of graduates for the year ending June 30, 1905, was 5,606, a decrease of 141 below the preceding year and 92 below the year 1903. The lowest number of graduates since 1900 was 4,999, in 1902; the highest number was 5,747, in 1904. For the year just closed the percentage of graduates to matriculants was 21.4. For 1904 it was 30.3; for 1903 it was 22.8. The decrease in the number of graduates from the regular colleges in 1905 was 64; from the homeopathic colleges, 95. The number of graduates from the eclectic colleges is 7 greater than it was last year, and 9 in the case of the unclassified college. The graduates of 1905 from the homeopathic colleges have been fewer in number than in any year since 1880. The electic schools, on the other hand, graduated more students in 1905 than in any year since 1890.

Table of Medical College Graduates.

Year.	Regular.	Homeopathic.	Eclectic.	Physio-Med. and Nondescript.	Total.
1880......	2,673	380	188	..	3,241
1890......	3,853	380	221	..	4,454
1900......	4,715	413	86	..	5,214
1901......	4,879	387	148	..	5,444
1902......	4,498	336	138	27	4,999
1903......	5,088	420	149	41	5,698
1904......	5,190	371	146	40	5,747
1905......	5,126	276	153	51	5,606

Women in Medicine.—During the past year 1,073 women were engaged in the study of medicine—4.1 per cent. of the total number of medical students, and 219 graduated—4 per cent. of the total number of graduates. In 1904 there were 1,129 women students, and 244 graduated. The proportion of female and male students was practically the same as last year. Of the total number of matriculants, only 221 (20.6 per cent.) were in attendance at the three colleges for women, and 54 (24.5 per cent.) graduated from them. The remaining number matriculated in and graduated from coeducational colleges.

Number of Colleges.—During the past year a number of colleges united, and several became extinct, so that at the present time there are 157 medical colleges in the United States (including the Philippine Islands). The medical department of the University of Porto Rico has not yet been organized and will not be for some time, but was included in our last year's statistics as an active college. Of the total number of colleges, 126 are regular, 18 homeopathic, 9 eclectic, 3 physiomedical, and 1 unclassified. During the year 2 homeopathic colleges united, and 1 eclectic college changed its faith and is now teaching regular medicine. Six of the regular colleges listed in our tables did not confer degrees, teaching only the first and second years of the medical course. Three colleges (two regular and one homeopathic) are exclusively for women; 63 for men; 91 are coeducational (66 regular, 13 homeopathic, 8 eclectic, 3 physiomedical, and 1 unclassified college). There are five schools to which only colored students are admitted, two less than last year, one having become extinct and the other now admitting both white and colored students. Three schools operate under the continuous course system, the year being divided into quarters, and the student being allowed to attend only a specified number of quarters or semesters in each calendar year. These three schools are located in Chicago. Sixty-eight regular colleges, 4 homeopathic and 1 eclectic college has a university or literary college connection or affiliation. Only two colleges (located in Chicago) impart instruction exclusively in the evening, and three colleges have both day and evening classes.

Comparative Table of Medical Colleges.

Year.	Regular.	Homeopathic.	Eclectic.	Physio-Med. and Nondescript.	Total.
1880......	72	12	6	..	90
1890......	93	14	9	..	116
1900......	121	22	8	..	151
1901......	124	21	10	4	159
1902......	121	20	10	4	155
1903......	121	19	10	4	154
1904......	133	19	10	4	166
1905......	126	18	7	4	157

Seventy regular colleges are members of the Association of American Medical Colleges; 14 belong to the Southern Medical College Association; all the homeopathic colleges are recognized as in good standing by the college committee of the American Institute of Homeopathy, and all the eclectic colleges are members of the National Confederation of Eclectic Medical Colleges.

The comparative table of medical colleges shows that the raising of entrance requirements has been effective, in a measure, in reducing the number of colleges. In many of the colleges the number of students in attendance was so small that the college authorities were confronted with the necessity of either effecting an amalgamation with some other college or of passing out of existence. The expense of conducting an up-to-date medical college is greater than the income from a small number of students; hence, stockholders are confronted by an assessment levy which they have no desire to meet. On the other hand, college authorities are recognizing more and more the desirability, for the sake of improving medical education, of having fewer and better medical colleges.

Length of Terms.—Here, too, the upward tendency of educational matters is noticeable. Last year 56.8 per cent. of the colleges had terms of less than eight months' duration, whereas this year only 39 per cent. were in this class. Last year the number of colleges having a six months' term was 27 (16.3 per cent.), whereas this year there were only 15 schools (9.4 per cent.) Last year only 19 colleges (11.6 per cent.) had a session of nine months' duration. This year there were 38 colleges (24 per cent.)

Table of College Terms.†

	Schools.		Per cent.	
6 months..................	(27)	15	(16.3)	9.4
7 months..................	(44)	35	(27.0)	22.0
7½ months..................	(22)	12	(13.5)	7.6
8 months..................	(34)	46	(20.8)	29.0
8½ months..................	(13)	10	(7.9)	6.1
9 months..................	(19)	38	(11.6)	24.0
*10 months..................	(4)	3	(2.4)	1.9

†Figures in brackets are for year 1904.
*Night schools.

Most of the colleges having six months' sessions are located in sections of the country where educators claim the educational facilities are such as to prohibit terms of longer duration. Most of the homeopathic and eclectic colleges have seven months' sessions. As we have pointed out before, the term "months" is exceedingly elastic. It always includes vacation periods. It is to be hoped that ere long this term will be discarded for "weeks." The college and state examining boards associations have substituted a requirement of thirty weeks, exclusive of holidays, for that of seven months. It is the equivalent of the old requirement of eight months. We have had no reason to change our opinion expressed last year that the ideal way of specifying the length of a college term is by requiring attendance in college for a definite number of hours in each subject taught.

Of the total number of matriculants, about 1.8 per cent. attended the night schools. About 24 per cent. attended colleges having sessions of nine months each. About 37.8 per cent. attended colleges having eight to eight and one-half months' sessions; 27.5 per cent. attended colleges having seven and seven and one-half months' sessions, while only 8.9 per cent. attended six months' sessions. Thus it will be seen that over one-half (61.8 per cent.) of the total number of students registered attended colleges whose sessions average from eight to nine months, whereas only 36.4 per cent. attended the short-term colleges. It is evident, therefore, that the length of the term does not sway the student in his selection of a college, because the majority of students attended the long-term colleges. Students are more and more taking into consideration the standing of the college and what it has to offer. Fees, entrance requirements and length of term are secondary considerations with the better class of students.

THE INFLUENCE OF THE PRIVATE PHYSICIAN ON MEDICAL EDUCATION.

The private practitioner, wherever located, is often likely to feel merely a remote interest in the great subject of medical education. He finished his own undergraduate medical education perhaps years ago, secured his license to practice, and, occupied each day with his own work, he begins to feel more or less instinctively *that the circle of his immediate influence is getting to* be well defined. More or less remote from the medical centers, he finds that there is little occasion for him to take any concern in the welfare and progress of the numerous institutions that are carrying on the actual work of training the coming generations of medical men. The methods and machinery of medical study even in his own college are now widely different from these in vogue when he "sat on the benches"; the requirements are different, the annual announcements, of which a number reach him each year, are couched in phrases that convey no definite meaning on cursory glance. Nevertheless, the physicians of the country can and do exercise a powerful influence on medical education, particularly in their close and often confidential relations to the young men in the community who want to study medicine. It is true that in these days of advancing entrance requirements when many students pass directly from the college to the medical school, the old time preceptor has lost prestige, but in spite of that physicians of standing everywhere frequently are called on to counsel young men in regard to the study of medicine; and there is much responsibility in the advisory capacity that physicians assume toward prospective medical students. In the first place, the physician must determine in his own mind whether the applicant for advice is by nature and training properly qualified in mind and morals to be encouraged in his often hastily conceived aspirations. Unquestionably, much disappointment and many disgraceful failures, early as well as late, may be avoided by firmly urging on the manifestly unfit the folly of an effort he can not sustain. Assuming, on the other hand, that there is no evident lack of fundamental qualifications, what are some of the general considerations that should guide the physician in his advice to a young man about to study medicine?

Preliminary Educational Requirements.—As yet there is great latitude on this point on the part of our medical colleges and of our state boards of health in the matter of preliminary educational requirements, but there is a general consensus of opinion that the minimum is a first class high school education; and it must be remembered that this does not suffice for admission to our best equipped schools, which require either part or all of the usual college course, with special attention to physics, biology and chemistry and to French and German. Hence, at the very outset, a serious problem must be settled without prejudice, if possible, to the fullest achievable success in medicine. The question the physician must determine in his own mind, after giving due regard to the individual peculiarities of each case, is which course is more likely to give the greater power, the higher ideals, the better service. We believe that if physicians will consider carefully this question the result will be to the advantage of the standing and efficiency of the profession in this country.

The Medical School.—What are the essential qualifications that a medical school must possess in order to merit the recommendation of the conscientious physician in his advice to the prospective medical student? In the first place, it is evident that it must fulfill the essential requirements of the various boards of state examiners, because it would be unjust to send a student to a school the graduates of which are not generally recognized by state boards. Such schools exist and their graduates consequently carry a most serious handicap when it comes to the selection of the scene of their life work. The following are some of the points that should be considered in the selection of the school:

1. *Equipment and Resources for Teaching the So-called Fundamental Branches, Anatomy, Physiology, and Physiologic Chemistry, Bacteriology, Pathology, Pharmacology.*—It is a recognized fact that a thorough grounding in the fundamental elements of these sciences is necessary in order that the medical student to-day may be properly prepared for the study of the practical or clinical branches. In order to teach properly to medical students the fundamental branches suitable, well-equipped, but not necessarily elaborate or ornate laboratories are essential. Each laboratory or department must be under the charge of a specially qualified man, who, as a rule, should give his whole time to teaching and investigation in his branches. Depending on the number of students and special circumstances there must be in each department a variable number of assistants. It is a recognized pedagogical principle that in elementary laboratory courses there should be at least one instructor for every 10 or 15 students. Anatomy and pathology require human material in order to give adequate instruction and in many of our schools there certainly is a lamentable lack of fresh pathologic material for the study of the gross changes of disease. Manifestly, large sums of money are necessary in order to do this work satisfactorily, money for permanent buildings and equipment, and for annual appropriations for salaries and current expenses. It should be realized that on account of the changes in the past fifteen years or so in the teaching of the fundamental branches, the income from the fees of students no longer suffices to pay for the running of a medical school on a satisfactory basis. Endowments and university connections are necessary.

2. *Equipment and Resources for Teaching the Clinical Branches.*—We are agreed that the day of slovenly dispensary teaching, of the routine clinical lecture, of the crowded amphitheatrical surgical and medical clinic is past. Small classes, individual instruction, bedside work, practical obstetric work, and work in the clinical laboratories are now considered essential in order that the student may become directly and personally familiar with the actual manifestations and methods of treatment of disease. In order to do this, the school must have undivided control of adequate dispensary and hos-

pital facilities and the various clinical departments must be thoroughly organized, so that proper co-ordination is attained. This is the largest weak spot in our medical schools, taken as a whole, and fortunate is the student who is wisely guided in this respect. Attention also may be called to the fact that progressive clinicians, for evident reasons, no longer are satisfied with having their laboratory work "farmed out," and as a consequence the well-equipped medical, surgical and gynecologic clinic each has its own laboratory.

3. *Library.*—In order that the student may secure some idea of the character of the literature of medicine in a broad sense, in order that he may be trained in the use of medical literature, in order that he may learn the necessity of following the main lines of development of medicine, if he wishes to grow and not to fossilize as soon as he leaves the medical school, and for other reasons, not the least of which are the needs of the faculties themselves, libraries are now an essential part of the equipment of the modern medical school. There has been a gratifying growth of interest in medical libraries in the United States during the last few years and several medical schools are now in possession of good libraries, from which students derive great inspiration and benefit. Unfortunately, however, the majority of our schools are not so favored and in numerous instances access can not be had to any medical library because there are large sections of the country that as yet are barren of library facilities. Here is a golden opportunity for physicians to influence medical education directly as well as indirectly, by joining hands in efforts to remedy this great need.

4. *Location.*—Other things being equal the location of a medical school is well worth consideration in the interest of the student. The majority of our schools are located in the larger cities, many of them in undesirable districts, in which vice in various forms flourishes rankly. The kind physician will hesitate in sending young men into the midst of such surroundings in preference to other places with a clearer, purer atmosphere. In this connection, it may not be out of order to ask what are the schools doing for the moral and physical welfare of the student? What about club rooms, gymnasiums, athletic fields, libraries and other influences for a healthy life?

Many other points must be omitted, such as the composition and the manner of appointment of the faculties, the arrangement of the curriculum, the records of the schools as to scientific investigation by the members of the faculties, the night school, etc.

The private physician has the power to influence medical education effectively by taking an interest in medical legislation in the various states. At every session of the state legislature questions of great moment to medical education and on which the members of the legislature need trusted and unselfish advice come up for discussion. Right here is an opportunity for effective influence that there is reason to fear physicians too often neglect. We see that both in his private as well as in his public relations the physician, wherever he may be, has placed on him certain responsibilities with reference to medical education which, if discharged conscientiously and high-mindedly, can not but have a far-reaching influence.

NATURAL RACE IMMUNITY.

Formerly it was believed that some human races possessed an absolute immunity to certain specific infectious diseases. Yellow fever, for instance, was supposed and is regarded even now as of little or no danger to negroes. The natives in yellow fever districts were said to escape the disease because they were "acclimatized." Livingstone declared that the native African was immune to syphilis, but unfortunately it has turned out that in this case the supposed immunity meant only this, that up to that time and for some time afterward syphilis had not been introduced into those parts of Africa traversed by the great explorer. So also has it been claimed that negroes are immune or but little susceptible to the malarial diseases. On the other hand, the colored race has been regarded as peculiarly susceptible to smallpox.

With the gradual growth of exact knowledge in regard to the spread of infectious diseases in all parts of the world, the belief that any human race possesses any absolute insusceptibility to the diseases just mentioned and to others of a similar character is gradually changing. What at first has seemed to be a natural, inborn immunity is, little by little, found to be in reality either a relatively high resistance, the consequence of acquired immunity, or the mistaken result of a prolonged absence of the opportunity for infection to develop.

The different behavior of the same infectious diseases among different races in the same country, as shown, for instance, by the relative infrequency of bubonic pest in Europeans in India and elsewhere as compared with its great frequency among the poorer classes of the natives, finds its true explanation not in any real insusceptibility on the part of the Europeans but in the different conditions that obtain as to cleanliness and general hygiene. The Europeans, in consequence of better hygiene, are not so exposed to infection, and, if exposed, perhaps better able to withstand it because of a greater general but non-specific resistance by virtue of better food and better care of the body in general. The same general observations may be made with reference to cholera. Knowing the sources of the disease, the intelligent civilized man is able to avoid it, while the poor native freely exposes himself to infection.

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The different behavior of the same infectious diseases among different races in the same country, as shown, for instance, by the relative infrequency of bubonic pest in Europeans in India and elsewhere as compared with its great frequency among the poorer classes of the natives, finds its true explanation not in any real insusceptibility on the part of the Europeans but in the different conditions that obtain as to cleanliness and general hygiene. The Europeans, in consequence of better hygiene, are not so exposed to infection, and, if exposed, perhaps better able to withstand it because of a greater general but non-specific resistance by virtue of better food and better care of the body in general. The same general observations may be made with reference to cholera. Knowing the sources of the disease, the intelligent civilized man is able to avoid it, while the poor native freely exposes himself to infection.

The Jews of western Europe have, relatively, little tuberculosis. This is not due to any true race immunity, as shown by the prevalence of the disease among the less favored members of this race in Poland, Russia, and in the ghettos of our own large cities.

The idea that the natives of South Africa were immune to malaria was shown to be without any basis in fact by R. Koch, who found that the disease is prevalent among the African children and that the small degree of susceptibility of the adults is due to a true acquired immunity. There is abundant reason to believe that an acquired immunity also explains the alleged natural insusceptibility to yellow fever on the part of the natives in districts in which this disease is endemic. It is to be borne in mind that a severe attack is not necessary for the establishment of an acquired immunity. It is quite probable that children, possibly to some degree protected by an intrauterine transfer of antibodies, may pass through comparatively mild attacks that are hardly noticed.

We know, too, that infectious diseases that have existed for a long time in a given country gradually appear in less and less virulent form among the people. This is certainly true as regards measles and possibly also scarlet fever, which, when introduced on virgin soil, e. g., the Faro or Sandwich Islands, assume a virulent type.

The increased attention given to tropical diseases, the continued and augmented necessity to guard against the introduction of infectious diseases prevalent among the civilized races into countries occupied by races as yet but little advanced on the road to civilization, and *vice versa,* are going to give us more definite information in regard to this question of true race immunity, the existence of which at the present time appears to be exceedingly doubtful.

THE EPIDEMIC CONTINUES.

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We know, too, that infectious diseases that have existed for a long time in a given country gradually appear in less and less virulent form among the people. This is certainly true as regards measles and possibly also scarlet fever, which, when introduced on virgin soil, e. g., the Faro or Sandwich Islands, assume a virulent type.

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Physicians Play Golf.—The Physicians'.Golf Association, of which Dr. Franklin H. Martin is president and Dr. Thomas J. Watkins, secretary and treasurer, held its annual tournament at the Midlothian links August 10 and 11. Dr. Allan T. Haight won in the first flight; Dr. Franklin H. Martin the second; Drs. William H. Wilder and Thomas J. Watkins divided the third; Dr. Charles F. Swan won the fourth, and Dr. C. S. Stevenson the fifth.

Deaths of the Week.—For the week ended August 12, 539 deaths were recorded, equivalent to an annual death rate of 14.11 per 1,000. This is a decrease from 14.85, the rate for the previous week, but an increase over 13.41, the rate for the corresponding week of last year. Acute intestinal diseases caused 200 deaths; 222 deaths were of children under 5; heart disease killed 37; consumption, 36; violence, 35; nephritis and pneumonia, each 30. and cancer, 21.

IOWA.

Physician's House Burned.—The residence of Dr. John F. McKittrick, Des Moines, was burned to the ground July 27. The loss is estimated at $8,000.

European Tourists.—Dr. John N. Warren, Sioux City, has gone to Germany.——Dr. and Mrs. James J. Ransom, Burlington, have returned after a year abroad.

Demands Sanitary Cars.—Iowa has started a crusade against insanitary passenger cars and the disease-breeding conditions that characterize many of the coaches on western railroads. This step has been taken by the state medical board and boards in other states will be asked to co-operate in carrying the crusade to a successful issue. It is proposed to secure the thorough cleansing of the passenger coaches at the terminus of every trip, as well as to secure the co-operation of the railroads in preventing the spread of disease through the medium of unsanitary coaches and sleeping cars.

Personal.—Dr. Robert E. Conniff, Sioux City, has been elected president of the State Board of Health, and first vice-president of the Iowa Anti-Tuberculosis Association.——Dr. and Mrs. Jacob W. Wells, Ossian, have been committed to the Iowa Hospital for the Insane, Mount Pleasant, on account of drug addiction.——Dr. Reginald H. Payne, Van Horner, has taken a trip to the West Indies.——Dr. Clarence Hetzel, Davenport, has been appointed assistant physician at the Orphans' Home in that city.——Dr. George P. Neal, Fort Madison, has been appointed a state delegate to the Trans-Mississippi Commercial Congress, which meets in Portland, Ore., August 16-19.——Dr. Paul H. Schaefer, Burlington, has been elected physician of Des Moines County.

KENTUCKY.

Acquitted.—Dr. Edward C. Courtney, Neave, who shot and killed his partner, Dr. W. M. Carney during a "misunderstanding," in December last, was acquitted July 14 on the ground of self-defense.

Personal.—Dr. William M. Hanna, Henderson, has had a cerebral hemorrhage.——Dr. Edward Alcorn, Hustonville, is ill and under treatment in St. Joseph's Hospital, Lexington.——Dr. G. Z. Horine, Graefenburg, fell over a chair, breaking five ribs.——Dr. Irvin Abell, Louisville, who was operated on for appendicitis last month, is making a satisfactory recovery.——Dr. Robert C. H. Rademaker, Louisville, was found unconscious and suffering from a wound in the head July 26.——Dr. Alfred G. Farmer, Louisville, sailed August 14 for Panama.——Dr. Oscar E. Bloch has been appointed lecturer on surgery in the University of Louisville Medical Department.——Dr. J. Mason Morris, Louisville, is seriously ill at Battle Creek, Mich.

MARYLAND.

Bequest.—The Hebrew Hospital, Baltimore, has received a bequest of $1,000.

Insane Asylum Journal.—The *Maryland Hospital News* is a monthly four-page paper which emanates from Spring Grove Asylum for the Insane. It is edited by a patient and is believed to be the only paper of the kind in existence. It was first issued in 1899.

Personal.—Dr. H. Burton Stevenson, Sherwood, Baltimore County, had his left ankle broken while out driving.——Dr. Hugh Warren Brent, Baltimore, is in Berlin and will later go to Denmark.——Dr. William J. Watson, who was operated on for appendicitis, has recovered and has gone to West Virginia for the rest of August.

MASSACHUSETTS.

Donation to Lowell Hospital.—Frederick Fanning Ayer has given $50,000 to Lowell General Hospital, the income of which is to be used for such purposes as the trustees may decide.

Senior Student Drowned.—Walter L. Bradbury, Roxbury, a senior student at Tufts Medical College, who was employed as emergency physician at Nantasket Beach, was drowned at that place while swimming, July 30, aged 30.

Relief Hospital at East Boston.—The City Council of Boston has voted $30,000 for a relief hospital in East Boston, to be conducted like that at Haymarket Square, as a branch of the City Hospital. To this has been added the $11,000 available for the same purpose from the estate of Anne Taggart.

Automobilist Fined.—At the District Court in Dedham, Dr. Howard A. Lothrop, Boston, was fined $5 for speeding his automobile beyond the legal limit of 12 miles an hour. The explanation that he was going to a patient 83 years old in imminent danger of death did not avail in the eye of the law.

Personal.—Dr. Charles P. Thayer, Boston, secretary of Tufts Medical College, has resigned and has been succeeded by Dr. Frederic M. Briggs.——Dr. Hibbert W. Hill has resigned as director of the bacteriologic laboratory of the Boston Board of Health, to become assistant professor of bacteriology in the University of Minnesota and assistant director of the Minnesota State Board of Health laboratory.

MICHIGAN.

Abroad.—Dr. and Mrs. James Cleland, Jr., Detroit, sailed for Europe August 5.——Dr. and Mrs. Theophil Klingman, Ann Arbor, have gone to Europe.——Dr. Cressy L. Wilbur, Lansing, has sailed for Paris.

Hospital Notes.—Frank W. Hubbard, Bad Axe, has given $10,000 to build a hospital at that place, which it is said will be the only one in the Thumb of Michigan.——The Flint council has accepted the bequest of James J. Hurley of $25,000 and a site for a hospital to be known as the Hurley Hospital.——Mrs. Delia Alma Hanmer, Detroit, left by her will $10,000 to endow a room to be known as the Hanmer School of Music Room.

National Guard Changes.—On account of the resignation of Dr. John L. Burkart as major-surgeon of the Fourth Infantry, M. N. G., Captain William T. Dodge, Big Rapids, has been made major and surgeon; Lieutenant Ralph C. Apted, Grand Rapids, captain and assistant surgeon, and Dr. Howard A. Grube, Coldwater, lieutenant and assistant surgeon. Major Burkart is still in the United States service in the Philippine Islands.

Personal.—Dr. G. T. Richards of the medical staff of the Michigan Asylum for the Insane, Kalamazoo, has resigned, and Dr. Bert C. Stripp has been added to the staff.——Dr. James Cummings has been made director of the Pasteur Institute at the University of Michigan, vice Dr. Thomas B. Cooley, resigned.——Dr. Albert P. Ohlmacher, formerly of Gallipolis, Ohio, has been appointed director of the biologic laboratory of Frederick Stearns & Co., Detroit.——Dr. Oliver A. La Crone, Kalamazoo, is critically ill with rheumatic arthritis.

NEW YORK.

Diphtheria in Rochester.—During July 114 cases of diphtheria were reported in Rochester, with 9 deaths.

Fraud Order Issued.—The postmaster general has issued a fraud order against the New York Institute of Physicians and Surgeons and Prof. Thomas E. Adkins of Rochester, N. Y., its president. Newspaper advertisements in the shape of seeming news told of the wonderful "vitaopathic" treatment.

Memorial to Young Trudeau.—A memorial window has been placed in St. John's in the Wilderness, Paul Smith's, in the Adirondacks, in memory of the late Dr. Edward L. Trudeau, Jr. The window was unveiled last week, and shows a figure of a young man in the garb of a traveler with a caduceus in his right hand. Under the window is the inscription: "I will look unto the hills from which cometh my help. This window is placed here in loving memory of Dr. E. L. Trudeau, Jr., by his friends."

New York City.

Off for Europe.—Dr. Eugene Fuller sailed on the *New York*, August 11.——Dr. J. B. Zabriskie sailed on the *Minnehaha*, August 11.——Dr. Albert Leffingwell of Aurora sailed on the *Bremen*, August 10.

Smallpox in Harlem.—Two cases of this disease were discovered in Harlem on August 2. A daily inspection of the block in which they lived has been made since finding these cases, but no more cases as yet have occurred.

Destroying Bad Milk.—The summer corps of the Health Department has made several very thorough examinations of the milk supply of the city, with the result that thousands of gallons have been thrown away. Whenever the temperature of the milk is above 50 F. it is destroyed. The sanitary condition of the shops and utensils used in handling the milk has been improved.

Typhoid Fever at Bath Beach and Bay Ridge.—There are at present 173 cases of typhoid fever in three Brooklyn hospitals—the Norwegian, Seney and Long Island College. So many were leaving the vicinity that a meeting of citizens was held to consider what could be done to check the epidemic. They claimed that the situation was by no means as alarming as had been represented. The Board of Health has prepared a circular letter entitled "How to Avoid the Contraction and to Prevent the Spread of Typhoid Fever," which will be put into the hands of the people living in infected houses.

New Brooklyn Hospitals.—For years East New York and Canarsie have felt the need of an institution with an ambulance service, as the nearest hospitals are from two to five miles distant. The contemplated institution is to take the place of the Bradford Street Hospital, which is an old building entirely inadequate in every respect. A site has been purchased facing Linton Park at a cost of $36,000. The Department of Charities has $50,000 available for the erection of this structure. The building to be erected now will only be a small part of what is designed to build later.——The charities department also has plans drawn for another hospital in Brooklyn, to be built on the Ocean Parkway between Avenue Y and Canal Avenue. This institution will be devoted largely to convalescent patients, will have a capacity of 75 beds and will cost about $100,000.

OHIO.

Joint Meeting and Outing.—The first joint meeting of the Lake and Ashtabula County medical societies was held at the Shore Club, August 7. Dr. H. N. Amidon, Painesville, greeted the guests, and Dr. William H. Leet, Conneaut, responded. Dr. Harris G. Sherman, Cleveland, acted as toastmaster.

Receiver Appointed for Hospital.—On petition of Dr. Robert C. Tarbell, and by consent of the parties concerned, Judge Dillon of the Common Pleas Court, on July 29 appointed Dwight Harrison, an attorney of Columbus, receiver of the new Columbus General Hospital Company, under bond of $10,000.

Wagar Likes West.—Dr. Charles P. Wagar, Toledo, who went to Los Angeles several months ago, has returned to Toledo for the summer. He expects to remain on the Pacific Slope and has commenced the publication of the *California Medical and Surgical Reporter* in addition to the *Toledo Medical and Surgical Reporter*.

Ill and Injured.—Dr. Jared E. Cone, Youngstown, is reported critically ill with heart disease.——Dr. Charles C. Knapp, Zanesville, is reported to be seriously ill from rhus poisoning at a hospital in Portland, Ore.——Dr. Hugh A. Baldwin, Columbus, is able to be out on crutches after an illness of 18 months.——Dr. D. Van Buren Burkett, Columbus, who had both hips broken and sustained internal injuries, July 7, by being crushed between two street cars, is improving.——Dr. J. W. Haverfield, Uhrichsville, fell from a tree, July 1, fracturing several ribs and the clavicle.

PENNSYLVANIA.

Philadelphia.

Bequest.—By the will of Henry Cramer, who died July 28, the German Hospital receives the sum of $500.

Births Exceed Deaths.—During July 2,582 deaths were reported and 2,902 births. The births, therefore, exceeded the deaths by 320.

Milk Inspection.—The number of inspections made in July were 4,928, and 122,665 quarts were inspected. Of this number 1,540 quarts were condemned; 1,332 chemical examinations were made, and 502 microscopic examinations.

Bacteriologic Laboratory Report.—The report of the bacteriologic laboratory for July shows that 1,526 specimens were examined for diphtheria; 416 examinations were made of typhoid fever blood; 474 examinations of milk, and 74 of sputum. The laboratory supplied 598 bottles of antitoxin.

To Fight Typhoid.—There being no sign of diminution in the spread of typhoid fever in this city, the Bureau of Health has prepared a circular containing valuable instructions in regard to preventing the disease. Copies will be distributed by the assistant medical inspectors in a house-to-house visitation throughout the city.

Medical Inspection.—The number of inspections made by the medical inspectors, excluding schools, during the month of July aggregated 14,477. They ordered 414 fumigations, and examined 28 cases for special diagnosis; 164 cultures were taken, 74 injections of antitoxin made, and 980 vaccinations performed.

Violation of Pure Food Laws.—By the action of Dairy and Food Commissioner Warren a number of dealers were held under $400 bail each for court, and two defendants were fined $57.50 each, charged with selling drinks adulterated with saccharin. Warrants have been issued for several dealers, and still others are being watched by the agents of the commission.

Suits Against Meat Dealers.—On August 9 the semi-official announcement was made at the State Dairy and Food Bureau that within the next thirty days fifty or more suits will be brought against meat dealers in central Pennsylvania for selling "doctored" meats. Among the offenders are several agents of western companies. These suits will be brought in about twenty-five counties.

To and from Europe.—Dr. and Mrs. George E. Levis sailed on the *Caronia* from New York, August 8.——Dr. Walter M. L. Ziegler has returned from Europe.——Dr. Robert C. Moon, vice-consul for Liberia, has returned from Europe.——Dr. and Mrs. William B. Van Lennep returned August 8 from abroad.——Drs. V. S. Gaggin, William R. Gieser and M. P. O'Neill sailed on August 12 on the *Merion*.

Irreparable Fire Loss.—The Medical Hall of the University of Pennsylvania, Philadelphia, containing one of the most valuable anatomic collections in the world, was burned August 14. Very few of the specimens were saved. The loss on the building and exhibits is estimated at $150,000, but the anatomic collection can not be replaced. The fire occasioned a panic in the hospital adjoining the medical hall but no casualties occurred.

Hospital Reports.—During July there were admitted to St. Mary's Hospital 234 patients; remaining from last month, 90; discharged during July, 224; total number of patients in hospital, 100; charity patients, 288; pay patients, 36; ambulance calls, 62; brought by patrol, 45. Out-patient department—Brought by patrol, 84; new cases, 775; old cases, 1,659; *x*-ray treatments, 47; radiographs, 8; fluoroscope examinations, 9; total, 2,498.

River Pollution.—On August 9 the report of Chief Medical Inspector Cairns on the pollution of the Schuylkill River was made public by Director Martin. The river and its tributaries were recently inspected by Dr. Cairns and Dr. Seneca Egbert from Reading down to the Fairmount Park. A body of nuisance inspectors have been sent to Manayunk, where the conditions are especially bad. A copy of the report was sent to Dr. Samuel G. Dixon, state health commissioner, who finds much encouragement in the willingness exhibited by the different municipalities along the Schuylkill River to co-operate with the health department in improving the conditions that have been found a menace to public health.

Health Report.—The deaths from all causes during the week ended August 12 aggregated 438. This is a decrease of 45 as compared with last week and a decrease of 3 as compared with the corresponding week of last year. The principal causes of death were: Typhoid fever, 14; whooping cough, 5; diphtheria, 5; tuberculosis, 41; cancer, 14; apoplexy, 16; heart disease, 21; acute respiratory disease, 25; enteritis under 2 years, 83; Bright's disease, 30; premature birth, 11; congenital debility, 11; old age, 8; accidental injuries, 16, and marasmus, over 3 months, 17. There were 162 cases of contagious disease reported, with 19 deaths, as compared with 166 cases and 12 deaths reported the preceding week. There were 109 new cases of typhoid fever, an increase of 9 over last week.

GENERAL.

Missouri Valley Society to Meet.—The eighteenth annual meeting of the Medical Society of the Missouri Valley will be held at Council Bluffs, Iowa, August 24-25. The sessions will be held in the auditorium at Lake Manawa, a summer resort near the city. The president is Dr. S. G. Burnett, Kansas City, and the secretary, Dr. Charles Wood Fassett, St. Joseph, Mo.

American Surgeons Receive Degrees.—At the fourth centenary of the Royal College of Surgeons of Edinburgh, July 22, the honorary fellowship of the college was conferred on Drs. William S. Halsted, Baltimore; William W. Keen, Philadelphia; Howard A. Kelly, Baltimore; and *in absentia* Drs. William J. Mayo, Rochester, Minn.; Charles McBurney, New York, and John Collins Warren, Boston.

Death Rates in Large Cities.—The Bulletin of the Chicago Department of Health gives the following statistics of July mortality in cities of more than a half-million inhabitants:

Cities.	Population.	Deaths.	Rate.
New York	3,902,097	7,548	22.76
Chicago	1,990,750	2,280	13.48
Philadelphia	1,417,062	2,582	21.45
St. Louis	636,973	887	16.39
Boston	617,102	1,086	20.70
Baltimore	546,217	1,163	25.05

Chinese Immigration Frauds.—It is reported that Chinese immigrants are using solutions of adrenalin to conceal symptoms of trachoma. This practice is not original with the Chinese, as immigrants from Europe were found to be using this drug for the same purpose (The Journal, Dec, 17, 1904). It is reported that an American physician, engaged in private practice in Hong Kong, makes a specialty of putting Chinese into condition to pass the immigrant inspectors at San Francisco. The Public Health and Marine-Hospital Service is reported to have the matter under investigation.

THE YELLOW FEVER SITUATION.

INFECTION BELIEVED UNDER CONTROL—RELATIVELY LOW DEATH RATE—OUTSIDE COMMUNITIES STILL PANICKY.

Louisiana.

Steamer Held.—The Norwegian steamer *Saphir*, from Colon, is held at Quarantine, and two patients were taken off the ship and placed in the detention camp at the quarantine station.

Immune Attacked.—Surgeon Thomas D. Berry, United States Public Health and Marine-Hospital Service, one of the first to reach New Orleans, and considered to be immune, was stricken down with yellow fever August 10 and has been removed to the special yellow fever ward in Touro Infirmary.

Spread of the Fever.—Up to August 15, 1,122 cases have been reported in New Orleans, with 184 deaths, from 229 foci of infection. On August 15, 62 cases were reported, with 6 deaths, from 19 new foci. Outside of New Orleans there have been up to date 129 cases and 24 deaths.

Disinfection Day.—Next Sunday has been designated as a day of general disinfection for New Orleans, and appeals have been made to every householder, every boarding or lodging-house keeper, every hotel-keeper, every merchant and manufacturer, and every person having any enclosure of any nature, whether it be a stable or a room in an office building, to fumigate at 10 o'clock on that day, burning sulphur under direction of the Marine-Hospital officials, for at least two hours.

Failed to Screen Cisterns.—Hundreds of affidavits were filed in the courts August 15 against New Orleans property holders, under the new mosquito law, because they have failed to screen cisterns. The cases are disposed of promptly and without favor, each offender being fined $25 and costs.

Now Under Control.—Dr. Joseph H. White, United States Public Health and Marine-Hospital Service, declared on August 15, after revising the official record of the day, that "Yellow fever in New Orleans is now under control. In my judgment the disease will be stamped out with a fight to prevent the spread of infection. There will be other cases, but we now have the situation in hand."

Expert Arrives.—Dr. John Guiteras, the yellow fever expert, arrived in New Orleans August 15, and after a conference with Dr. White and inspections of the original infected district, he declares that the present methods will stamp fever out of New Orleans within forty days.

Would Force Relaxation of Quarantine.—The State Board of Health on August 8 decided to ask the governor to employ the national guard in enforcing some relaxation of the most drastic of the local quarantines in the state. Towns were ordered not to refuse admission to any person having a proper certificate of health not over twenty-four hours nor to any person having undergone six days' detention. Interference with trains and boats is forbidden, and mail, express and freight carried in fumigated cars must be admitted.

Baton Rouge has its local company of state militia acting as quarantine guards.——It is reported that a mass meeting of citizens has voted that there is no foundation for the conclusion that mosquitoes carry yellow fever, and that thereon the medical members of the board of health resigned.

Monroe.—The mayor of Monroe on August 15 called out a company of militia to support a shotgun quarantine established by citizens of Monroe, who objected to the order of the local health board, lightening the quarantine.

Shreveport has had six cases at its detention camp, but no deaths, and Texas has raised the quarantine against freight trains from Shreveport.——Shreveport has a new board of health, the old one having resigned. The new members are Drs. T. Edgar Schumpert, Milton F. Smith and Francis S. Furman, Mr. W. A. Mabry and Mr. Henry Bodenheimer.

St. John.—Quarantine guards at St. John are said to have beaten Judge J. L. Gaudet of that place when he wished to reenter on his return from Jefferson.——In the same place a woman and child are alleged to have been manacled and taken to an unfit camp.

Vinton.—The postoffice at Vinton has been closed until train service is resumed.

Outside Cases.—Two cases of yellow fever are officially reported at Tallulah.——On August 14 a case was found at Lutcher.——At Diamond and Goodhope plantations one suspicious and three positive cases were discovered.——Two more cases were discovered on the Wildwoods plantation in Jefferson Parish. Another case has developed at Port Barrow, Ascension Parish. Two cases have occurred in La Fourche Parish. Two cases and one death are reported at Porte Celeste, Plaquemine Parish.——A new focus of infection has been found at Lafayette.——At Patterson three new cases de- established.——A suspicious case was reported August 15 veloped, making 49 in all, and an emergency hospital has been from Algiers.——The one case at Alexandria has been succeeded by no more.

Other States.

Alabama.—A dissension has arisen between Dr. William H. Sanders, state health officer, Montgomery, and the governor of the state, in an attempt to fix the responsibility for the delay of four days which occurred before the executive approval of the quarantine order against Louisiana was secured.——A case of yellow fever appeared in Montgomery and, at the request of the Jefferson County Medical Society, Birmingham declared a quarantine against Montgomery, arousing active discussion. Dr. Sanders appeared before the Jefferson County Medical Society, Birmingham, and asked that the quarantine against Montgomery be lifted, as the one imported case there had been properly isolated and was recovering, and there were no other cases. By a vote of 39 to 13 it was ordered to recommend that the quarantine stand, because there was not absolute proof [illegible] case came from outside infection. The [illegible] the city authorities to wage a war of [illegible] mosquitoes.——The one yellow fever patient at Montgomery has recovered and without spread of infection.

Arkansas.—Legislative neglect is making trouble in the state, as the last legislature failed to appropriate anything for the State Board of Health, not even making any allowance for the salary of the secretary. Notwithstanding this the state has declared a complete quarantine against all infective places, leaving the execution of its orders to the national guard. No one who has left an infected point can be admitted to the state until five days thereafter. Tropical fruits and household goods from infected districts will not be admitted. These rules were formulated by the State Board of Health, of which Dr. George M. B. Cantrell, *Little Rock*, is president.——At rifle muzzle Helena refused a river boat permission to take on coal or lower a yawl.——Little Rock requires certificates of health from all who come from the South, and is engaged in oiling ponds and cleaning up the city.——Jonesboro has enforced its quarantine with the local company of national guard.

Georgia.—Savannah has declared a quarantine against persons and personal baggage coming from Louisiana. None from such points will be admitted until six days after departure therefrom.——Columbus has quarantined against all places where yellow fever exists or may exist, requiring those from infected points to undergo twenty days' detention.——Atlanta has in force a train inspection service to look for suspicious cases of illness and to learn where passengers have come from and their destination.

Kentucky.—Louisville has medical inspectors board all trains from the South looking for suspicious cases of illness. A screened ambulance and screened hospital ward are kept in readiness.——Kentucky, while open to refugees, requires transportation officials to report to the State Board of Health every case without a health certificate, thus enabling local supervision of every suspicious case. The board urged screening against mosquitoes and other disease-bearing insects, together with destruction of their breeding-places.——Fulton and Wickliffe have declared quarantines against infected points, but the State Board of Health ordered the quarantine raised, and advised the authorities at Paducah that its proposed quarantine would not be recognized, thus leading to the abandonment of the project. The state board said: "Local quarantines are worse than useless, giving rise to a false sense of security which interferes with the exercise of effectual precautions, and imposing unnecessary restrictions on travel and commerce. . . . No refugee is a source of danger unless he develops the disease, and not then if placed in a well-screened room and protected from mosquitoes." Paducah very sensibly set to work oiling stagnant water and cutting weeds that shelter mosquitoes.

Illinois.—It is reported from Cairo that the stegomyia fascia is more prevalent than last year.——The secretary of the State Board of Health believes extraordinary precautions will be necessary to prevent the fever from getting a foothold in southern Illinois. Past experience has shown that in previous epidemics the disease has remained almost dormant during the summer, but has broken out with fury in September and October.——Every passenger and freight train and boat coming from the South is carefully inspected at Cairo, Thebes or Brookport. Day and night watchmen are stationed on the railroad bridge at Cairo and the entire water front is patroled day and night. This rigidity of inspection will not be relaxed until the coming of frost.

Indiana.—It was reported August 15 that a mild case of yellow fever had appeared in Waterford, LaPorte County. The patient had recently returned from Louisiana, where she had helped to nurse two sisters who died from the disease—— The health officer at Crawfordsville telegraphed August 15 to the State Board of Health that a case resembling yellow fever had developed there. The state health authorities have sent Dr. Alembert W. Brayton, Indianapolis, to investigate this case.

Mississippi.—Cases have been reported at Sumrall and Lumberton.——Laurel, Ormisburg, Pervis and Aberdeen "will not admit passengers or baggage from any point on the map."—— Vicksburg has applied oil to all stagnant waters and lime to noisome spots.——Surgeon S. B. Young, United States Public Health and Marine-Hospital Service, addressed the city council and citizens of Jackson August 1, giving convincing arguments of the truth of the mosquito theory of transmission of yellow fever.——The health officer of Greenville, Dr. O. H. Stone, resigned on August 2, supposedly on account of friction with the city administration regarding quarantine.

New York.—One of the crew of the *Advance*, which arrived on August 3, died in quarantine of yellow fever. The record to date, out of more than 200 suspects, shows three genuine yellow fever cases, two of which were fatal. There were, on August 12, 19 members of ships' crews and passengers at Swinburne Island awaiting developments.

North Carolina.—Wilmington has the quarantine epidemic and refuses to admit persons or baggage from infected districts until they have undergone 15 days' detention.

Tennessee.—Chattanooga, Hamilton County and West Tennessee are quarantined against the infected region; Knoxville welcomes refugees.——Memphis, beginning August 7, enforced rigid quarantine against tropical fruits.——Coffeeville refuses to admit passengers or freight and express matter from infected districts.——At Memphis there has been a disagreement as to the limits of authority of the city and county boards of health that has caused suburban residents some inconveniences at inspection stations.——Dyersburg refuses admission to persons, animals and freight of every character and kind coming from infected districts, and has established a ten-day detention period.

Texas.—Orange, on August 3, reported in detention nearly 100 travelers, including some women and children, while it could not offer adequate accommodations for that many men. ——The Gregg County health officer, Dr. W. D. Northcutt, on August 2 "declared quarantine in this county against all points."

General.

Mexico.—The Superior Board of Health of Mexico reports on August 2 only four cases of yellow fever in the entire republic—all at Vera Cruz.——Trains and boats from New Orleans and Panama are being watched.

FOREIGN.

Poisoning from Shellfish in Scotland.—Dr. A. K. Chalmers, medical officer of health for Glasgow, in a recent report to the town council, calls attention to the dangers of poisoning from shellfish. During past summers many cases of enteric fever have been traced to consumption of shellfish at seaside resorts. For example, in connection with the Lochgilphead cases of enteric fever of two years ago, the regular gatherers of shellfish at that place rejected such as were regarded by them as "sick" because they lay on the surface, while the visitors collected and ate these without hesitation, not knowing that the healthy mollusc of the species then implicated was to be found below the surface of the sand. Thus, while visitors sickened after consuming shellfish gathered on the spot, no cases were traceable among the consumers of those dispatched to Glasgow in the course of trade.

South African Medical Congress.—The seventh South African Medical Congress was held at Maritzburg, June 12-17. Over seventy medical men were present, a record attendance, as in the majority of cases as great sacrifice of time and money was involved as for physicians in this country to attend the Portland session of the American Medical Association. The address of welcome was delivered by the governor of Natal. The *Natal Mercury*, kindly sent us by Dr. W. A. Backenstoe, states that Dr. Hyslop, in his presidential address, laid emphasis on the necessity for uniformity in the compilation of vital statistics and for uniformity in medical laws throughout the various South African colonies. A discussion took place on the report of a committee appointed at the last congress to consider the subject of forming a South African Medical Guild as a center for medical organization for all matters other than scientific work. The principle of a guild was adopted, but later a proposal definitely to instruct the committee to carry the principle into effect was dropped and it is understood that those interested in the subject will move on their own responsibility. The feeling that some such organization is urgently needed is universal, and although a strong party maintains that the work could be done by the branches of the British Medical Association, an insuperable obstacle to this lies in the objection of the practitioners in the Transvaal and the Orange River Colony to establish branches; while unless an organization extends over all the colonies it would be of little use.

Correspondence

Compensation of Physicians as Expert Witnesses.

CHICAGO, Aug. 11, 1905.

To the Editor:—In THE JOURNAL, Aug. 5, 1905, page 420, reference is made to the Nebraska case of Main vs. Sherman County, where it was decided, as has often been done in similar cases, that "one testifying as an expert on a subject requiring special knowledge and skill, in the absence of a special contract is entitled only to the statutory fee." The details of this particular case are unknown to me, but I do know that often the physician's testimony and advice constitute the determining factor in many law suits. I know also, by personal experience, that only too often such assistance is forgotten as soon as a favorable decision is rendered, and that even a moderate compensation for his services is refused. In order that the profession may not continue to be ruthlessly mulcted and shamefully imposed on, I beg to direct attention to the decision of the Appellate Court of the First District of Illinois, filed Dec. 23, 1898, in my case against Emlen S. Blye, where the judgment of the Circuit Court is reversed and the cause remanded. The details of this case were presented by me to the Illinois State Medical Society at its Galesburg meeting, May 18, 1898, and are published in the official transaction of the society for that year, as well in the *Medical Record*, Aug. 27, 1898. The result of my contention, which extended over nine years, conserves to some extent the rights of expert witnesses. It determines that if a physician, at the request of a party to a suit, performs any extra service for such party in the prosecution of the suit, a contract for compensation for such services is a valid one, and a recovery can be had thereunder. The point as to the legality of contract for extra compensation beyond the statutory witness fee, for the mere giving of expert testimony, was not raised. It is possible the Dixon decision has definitely settled that question. As an expert always renders some service beyond that of merely testifying, in the way of counseling with attorneys, if not otherwise, the probability is that the effect of the Dixon decision is nullified. In any event, members of the profession are now protected against those who would accept the benefit of their services and then repudiate the contract under which these services are rendered, provided only the contract to be for more than the naked testimony.

When called as an expert witness, therefore, the physician in most instances may confess his inability to answer satisfactorily the hypothetical question without an examination of the patient, which must be paid for. As the court expressly said in the well-known Dixon case: "A physician can not be punished for a contempt for refusing to make a postmortem examination, unless paid therefor, nor can he be required to prepare himself in advance for testifying in court by making an examination, or performing an operation, or resorting to a certain amount of study, without being paid therefor." I am anxious that the rights of tne physician in these cases should be understood. I received nothing in my case but my experience, for the patient went into bankruptcy about the time the decision was rendered in my favor. Nevertheless, it gives me much satisfaction to say that my legal fight of nine years established a principle which the profession is entitled to take advantage of and which, I trust, will tend to prevent further injustice and imposition.

Denslow Lewis.

Association News

Biographical Card Index and American Medical Directory.

In accordance with the decision of the House of Delegates at the Portland session, the American Medical Association is accumulating data for a biographical index of the medical profession of the United States, and also material for the American Medical Directory, which will shortly be issued. The assistance and co-operation of physicians is requested in this effort to publish a reliable directory of our profession without any suggestion of commercialism. In this connection we desire to call attention to advertising page 61. We hope that every reader of The Journal will give this matter his immediate attention.

Marriages

E. P. Brown, M.D., to Miss May Belle Hill, both of Bessemer, Ala.

Dickinson Gorsuch, M.D., to Miss Irene Evans, both of Baltimore, August 9.

J. Boyd Swonger, M.D., to Miss Mabel Broome, both of Voth, Texas, July 31.

W. E. Pugh, M.D., to Miss Austin, both of Miami, Fla., at DeLand, Fla., July 31.

William H. Lence, M.D., Jonesboro, Ill., to Miss Mary Alden of Anna, Ill., August 2.

Carl S. Wasseweiler, M.D., to Miss Edith Dunold, both of Milwaukee, in Chicago, July 17.

Ernest S. Mattox, M.D., Terre Haute, Ind., to Miss Emma Meseke of Seymour, Ind., August 3.

Hubert D. Brennan, M.D., Bristol, Conn., to Miss Celia Fanning of Hartford, Conn., August 2.

D. Nicola Golino, M.D., Providence, R. I., to Miss Carlotta Menente of Italy, at Boston, August 1.

John H. Doyle, M.D., Grafton, W. Va., to Annie C. Greany, M.D., of Fall River, Mass., August 10.

Homer F. Parr, M.D., Magdalena, Mexico, to Miss Maude Hitchcock of Wellington, Kan., June 28.

Hartzell Langstaff, M.D., Roberts, Ill., to Miss Martha J. Shute of Melvin, Ill., at Chicago, July 8.

James Cleland, M.D., Jr., to Miss Anna Estelle Siebert, both of Detroit, at New York City, July 31.

William Pitt Hall, M.D., Frankfort, N. Y., to Miss Susie Marie Douglass of Earlville, N. Y., July 26.

Bernard N. McLaffery, M.D., to Mayme Jeffries, M.D., both of Portland, Ore., at Ogden, Utah, July 26.

Frank R. Strong, M.D., Syracuse, N. Y., to Miss Hallie Gerdeane Morgan of Earlville, N. Y., August 2.

Richard J. Dowdall, M.D., to Miss Katherine Johnson, both of Crescent City, Cal., at San Francisco, August 3.

William Crozier Fawcett, M.D., Starkweather, N. D., to Miss Frances Edith Maywood of Toronto, August 1.

Luther Peck, M.D., Plymouth, Mich., to Miss Jeanne Thompson of Rochester, N. Y., at Union Lake, Mich.

Louis Smirnow, M.D., Bridgeport, Conn., to Miss Mabel A. Munn of Botsford, Conn., at New York City, February 17.

Walter Vernon Brem, M.D., Charlotte, N. C., to Miss Marion Wolcott Winkler of Milwaukee, at Pine Lake, Wis., August 3.

Deaths

L. J. Frazee, M.D. Medical Department of the University of Louisville, 1841, for many years a member of the faculty of his Alma Mater and of the Kentucky School of Medicine, and in his day one of the leading physicians, medical teachers and writers of his city, but for many years retired from practice and devoted to industrial and literary pursuits, died at his home in Louisville from senile debility, Aug. 12, 1905, aged 86.

Joseph Samuel Demaree, M.D. Memphis (Tenn.) Hospital Medical College, 1898, of Frankfort, Ky., a member of the state and county medical societies, died at the home of his father, near Bagdad, Ky., August 4, from typhoid fever, after an illness of five weeks, aged 38. At a meeting of the Franklin County Medical Society, August 5, resolutions of eulogy and regret were adopted.

Robert Fowler Beattie, M.D. McGill University Medical Department, Montreal, 1897, Brookline, Mass., a member of the Massachusetts Medical Society, was drowned off Phillips Beach, Swampscott, August 6, while taking his morning plunge, aged 35. For several years he served as ship's surgeon on the Cunard and Dominion lines.

Thomas J. Mitchell, M.D. University of Louisville (Ky.) Medical Department, 1848, surgeon of the One Hundred and Seventh Illinois Volunteer Infantry in the Civil War, and a prisoner in Libby Prison, died at his home in Bement, Ill., August 3, from dropsy, after an illness of more than a year, aged 82.

Horace Laidlaw, M.D. University of California Medical Department, San Francisco, 1880, chief surgeon of the Oceanic Steamship Company for five years, and surgeon to the Spreckels plantations at Maui, Hawaii, for three years, died at his home in San Francisco, August 2, after a long illness, aged 45.

Robert Edwin Jameson, M.D. Harvard University Medical School, Boston, Mass.. 1861, assistant surgeon and surgeon to the Eleventh Massachusetts Volunteer Infantry during the Civil War, died at his home in Jamaica Plain, Boston, August 4, from acute gastritis, after an illness of three hours, aged 67.

Orange H. Adams, M.D. Dartmouth Medical School, Hanover, N. H., 1884, a member of the American Medical Association, prominent in the medical and municipal life of Vineland, N. J., died at his home in that place, from spinal paralysis, August 6, after an illness of one week, aged 49.

Frank B. Donnelly, M.D. New York University, New York City, 1893, ill with tuberculosis, and discharged from the Rhode Island Hospital as incurable, committed suicide by shooting himself, in his office in Providence, R. I., while despondent, August 3, aged 42.

Robert Maitland Petrie, M.D. Department of Medicine of the University of Pennsylvania, Philadelphia, 1869, in 1872 and 1874 city physician of Jersey City, N. J., died suddenly at his home in Jersey City, August 3, from heart disease, aged 54.

John Gilman Pike, M.D. Medical School of Maine at Bowdoin College, Brunswick, 1847, one of the oldest practitioners of Strafford County, N. H., died at his home in Dover, July 31, after a long period of feeble health, aged 87.

Merritt E. Graham, M.D. Michigan, 1878, of Rochester, N. Y., for nine years coroner of Monroe County, died at the Graham Sanatorium, Rochester, August 3, from disease of the stomach, after an illness of three years, aged 49.

E. G. Martin, M.D. University of Louisville Medical Department, 1905, of Rocky Hill, Ky., died at Glasgow, Ky., July 21, from the effects of an overdose of morphin, taken, it is supposed, with suicidal intent.

John W. Morrow, M.D. Jefferson Medical College, Philadelphia, 1872, said to be the oldest practitioner in Forest County, Pa., died at his home in Tionesta, August 5, after an illness of several years, aged 68.

Dowdell Wood Allen, M.D. Medical Department of the University of Tennessee, Nashville, 1905, died at his home in Winona, Texas, May 25, from typhoid fever, after an illness of 32 days, aged 23.

Julius C. Bowen, M.D. Jefferson Medical College, Philadelphia, 1856, major-surgeon of the Second Iowa Volunteer Cavalry in the Civil War, died at his home in Rochester, N. Y., August 2, aged 74.

Seth D. Boggs, M.D. Bellevue Hospital Medical College, New York City, 1886, died suddenly while being carried into his house in Brooklyn, N. Y., August 10, from heart disease, aged 53.

William Ray Bramlett, M.D. University of Louisville (Ky.) Medical Department, 1881, died at his home in Florence, Ala., August 2, from septicemia, after an illness of two months, aged 43.

John C. Coats, M.D. Vanderbilt University Medical Department, Nashville, Tenn., 1878, died at his home in Huntsville, Ala., July 30, after an illness of only three days, from typhoid fever.

Frederick Brittin, M.D. College of Physicians and Surgeons of Chicago, 1904, of Divernon, Ill., died at the home of his parents in Springfield, Ill., from septicemia, July 31.

Orville A. Harding, M.D. Rush Medical College, Chicago, of Chicago, was drowned while hunting, in the Flambeau River, near Ladysmith, Wis., August 11, aged 35.

Joseph W. Kumpe, M.D. Medical College of Alabama, Mobile, 1873, died at his home in White Sulphur Springs, Mont., August 4, after a lingering illness, aged 58.

Daniel R. Crow, M.D. Memphis (Tenn.) Hospital Medical College, 1891, died at his home in Lay, Miss., August 2, from heart disease, after a long illness.

Louis A. Hortubise, M.D. Laval University Medical Department, Quebec, 1894, died at his home in Lowell, Mass., August 5, after a long illness, aged 33.

William R. Nevin, M.D. New York, 1887, died at his home in Jersey City, N. J., from cirrhosis of the liver, August 2, after a long illness, aged 45.

James Parker, M.D. Trinity Medical College, Toronto, Ont., 1871, died at his home in Ballard, Wash., August 2, from heart disease, aged 63.

David L. Deyo, M.D. Missouri, 1869, of Louisiana, Mo., died at St. Elizabeth's Hospital, Belleville, Ill,. August 1, aged 79.

Philip Fischer, M.D. University of Würzburg, Germany, 1868, died at his home in Cincinnati, August 9, aged 60.

Book Notice

The Pharmacopeia of the United States of America, By Authority of the United States Pharmacopeial Convention held at Washington, 1900. Eighth Decennial Revision. Revised by the Committee of Revision and published by the Board of Trustees. Official from Sept. 1. 1905. Cloth. Pp. 692. Price, $2.50. Philadelphia: P. Blakiston's Son & Co.

After five years' labor the revision of the Pharmacopeia of the United States has been effected and the work appears in a stately volume of 700 pages. Following precedent, 70 pages are devoted to a historical introduction, abstract of the proceedings of the national convention for revising the Pharmacopeia, with a list of the delegates from the various medical and pharmaceutical bodies and of the federal medical service represented, preface and introductory notices giving general directions for physical constants and standards, general processes and operations and a number of lists, i. e., of articles added, articles dismissed, changes in official Latin and English titles and comparative table showing the strength of the more important pharmacopeial substances and preparations in the preceding and the present Pharmacopeia. Then follows the text of the official articles, comprising over 500 pages, with the definitions in large, clear type and the tests in smaller print. While many new articles have been added, the number has not been increased, since an equal number of articles has been dismissed. The principal additions comprise twenty synthetical chemicals, an equal number of natural or synthetic principles representing the volatile oils, the suprarenal and thyroid glands, antidiphtheritic serum, a number of fluid extracts, several elixirs, emulsions, solutions, oleats, ointments, tinctures and effervescent salts. The dismissals are represented largely by drugs more or less obsolete and their respective extractive preparations, a number of pharmaceutical preparations superseded by more eligible and definite preparations and certain salts inorganic and organic now, but little used. The principal changes are represented by the change in titles of some chemicals, such as the acids of arsenic and chromium to arseni trioxidum and chromii trioxidum respectively, from carbolic acid to phenol, and chloral to chloral hydratum, the latter to conform to their chemical character. The chemical nomenclature has been retained in preference to that adopted by the American Association for Advancement of Science; in which the final "e" is deleted in the halogens and alkaloids. The pharmacopeial usage in distinguishing between alkaloids and glucosids by omitting the final "e" in the latter seems too popular to give way to the continental method adopted by the American Chemical Society. An innovation is the so-called purity rubric, which appears as a short definition at the head of all definite chemical compounds through which the minimum degree of purity of the articles is limited, thus: Potassium iodid KI 164.76. "It should contain not less than 99 per cent. of pure potassium iodid, and should be kept in well-stopped bottles." This allows not to exceed 1 per cent. unavoidable innocuous impurities, which are strictly limited in the nearly solid page of fine print giving tests and reactions, by which the merest trace of noxious impurities, heavy metals, etc., are absolutely excluded. In this respect the work is believed to be the most complete of any pharmacopeia and satisfactory from a pharmaceutical standpoint. While the changes in the strengths of articles, particularly galenicals, are not numerous, yet they are important, since the principles of standardizing drugs and their preparations has been extended to some sixteen drugs and many of their preparations. The most important change of all, however, at least from the physician's standpoint, is the change in the strength of some of the tinctures. In conformity with requirements of the International Conference for the Unification of Potent Medicines of 1902, the tinctures, except the compound ones, have been put in two groups: (1) Tincture of potent drugs to be 10 per cent. drug strength; and (2) of non-potent drugs 20 per cent. drug strength. Thus the 15 per cent. tinctures, including most of the so-called narcotic drugs, have been discarded for the 10 per cent. strength, and are, therefore, one-third weaker. The two largely used tinctures, aconite and veratrum viride, 35 and 40 per cent. drug strength respectively, have thus been reduced to the 10 per cent. strength. This is of the greatest importance to physicians and should have the widest publicity so that the fact may be generally recognized by September 1, when the new Pharmacopeia goes into effect—becomes official. Another innovation is the introduction of the average doses expressed in metric and customary weights and measures. This is not intended as a limitation on the physician, but simply an attempt to furnish some sort of official or authoritative standard for reference to pharmacists, especially as a guide in compounding and dispensing prescriptions. In order to avoid conflict with federal, and especially state, laws regulating standards for articles of food, it is especially announced in the preface that the standards of the United States Pharmacopeia are designed for and apply only to the articles for medicinal uses as distinguished from their employment as foods or in technical and industrial uses. The usual appendix of reagents and a valuable collection of tables for reference completes the volume, which, barring some minor deficiencies, is certainly the most elaborate pharmacopeia yet devised for any country.

Queries and Minor Notes

Anonymous Communications will not be noticed. Queries *for* this column must be accompanied by the writer's name and address, but the request of the writer not to publish name or address will be faithfully observed.

LIFE AND HABITS OF THE MOSQUITO.

Whitewright, Texas, Aug. 6, 1905.

To the Editor:—Please inform me where I can procure a recent work on the anatomy, habits and habitat of the various species of the mosquito

S. H. Landrum, M.D.

Answer.—Our correspondent is one of many who ask the same question. "The Mosquito," by Howard, cloth, $1.50, is a good book.

An excellent article on the subject, by Dr. John R. Taylor, Havana, Cuba, was published in The Journal, July 8, 1905, page 90. The best information is to be had in the bulletins of the United States Public Health and Marine-Hospital Service, which may be had by addressing the surgeon general, Dr. Walter Wyman, Washington, D. C.

INTERNATIONAL MEDICAL CONGRESS.

McKeesport, Pa., Aug. 9, 1905.

To the Editor:—Will you kindly inform me of the date of the meeting of the International Medical Congress in Lisbon next year? T. L.

Answer.—The International Medical Congress will meet April 19 to 26, 1906. The date and the program are given in The Journal, July 29, p. 337. Other information is in July 22, p. 262 (report of American Committee), June 17, pp. 1941 (excursion announcement) and 1942, and in Vol. xliv, pp. 139, 881, 1046, 1129 and 1140.

PHYSICIANS' CARDS IN NEWSPAPERS.

Dr. L. sends us the cards of some physicians from local newspapers, and asks us if they are strictly ethical. In addition to the name, address and telephone numbers, one of these cards states that the advertiser is ' Surgeon to —— hospital, Surgeon to to —— railway. United States examining surgeon, etc." The other gives similar facts, and in addition states: "Glasses accurately fitted. Surgery, and diseases of women."

Answer.—The profession generally regards as reprehensible the advertisement in newspapers by physicians of anything more than name, address, office telephone numbers, and special branches to which practice is limited. The details of the interpretation of this general rule, however, are to be handled by the local county medical society. Our correspondent and others will be interested in referring back to what we have already said on this subject in The Journal, Aug. 13, 1904, p. 485; Oct. 3, 1904, p. 1073; and May 20, 1905, p. 1631.

DETERIORATION OF APOMORPHIN HYDROCHLORATE.

Columbus, Ga., Aug. 3, 1905.

To the Editor:—What chemical change takes place when apomorphin hydrochlorate changes color from age? Is this a deterioration, and is the resulting compound poisonous? M. C.

Answer.—This is so unstable a compound that the U. S. Pharmacopeia (1905) directs that it should be kept in small, dark, amber-colored vials which have been previously rinsed with diluted hydrochloric acid and dried. The compound of this alkaloid prepared artificially from morphin with HCl is so delicate that on exposure to light and air it acquires a greenish tint, showing decomposition. The exact nature of the chemical change is obscure. When discolored the article should not be used.

GERMAN MEDICAL JOURNALS AND DICTIONARIES.

Detroit, Mich., Aug. 5, 1905.

To the Editor:—The physicians, Drs. Chassell and Bush, who inquired for German-English dictionaries, etc., would undoubtedly appreciate the German and English dictionary edited by Frederick Treves and Hugo Lang, published by J. & A. Churchill, 11 Burlington Street, London, England. L. Breisacher.

State Boards of Registration

COMING EXAMINATIONS.

Wyoming State Board of Medical Examiners, State Capitol, Cheyenne, Wyo., September 6. Secretary, S. B. Miller, Laramie.

Massachusetts Board of Registration in Medicine, State House, Boston, September 12-13. Secretary, E. B. Harvey, Boston.

Index to State Board Reports.—Reports of other state board examinations which have been held this year have been published in The Journal as follows: February 11, page 488, Arizona January report. February 18, page 566, District of Columbia and Oregon January reports. February 25, page 646, Indiana, North Dakota, Rhode Island and South Dakota January reports. March 4, page 732, Wisconsin January report. March 11, page 810, Vermont February report. March 18, page 896, Illinois and Washington January reports, with the questions asked in Washington. April 1, page 1059, Kansas February report. April 15, page 1211, Maine March report, with the questions asked in Oklahoma at the examination held in March. April 22, page 1303, Connecticut March report, and Montana and North Dakota April reports. May 6, page 1467, Arkansas April report, Nebraska February report, Oklahoma March report, and Utah January and April reports. May 13, page 1553, Rhode Island and Minnesota April reports, with questions asked in Minnesota. May 20, page 162, California, Indian Territory, Idaho and Kentucky April reports, with questions asked in Kentucky. May 27, page 1699, Arizona and West Virginia April reports. June 3, page 1795, District of Columbia April report. June 17, page 1950, North Carolina May report, with list of questions asked. June 24, page 2001, Illinois April report and Louisiana May report. July 1, page 60, Illinois May report. July 8, page 125, Indiana May report. July 15, page 209, Kansas April report, Minnesota and Wyoming June reports, and questions asked at Pennsylvania June examination. July 29, page 344, New Jersey and Delaware June reports, and Utah July report. August 12, page 487, Arkansas July report and South Carolina June report.

Connecticut July Report.—Dr. Charles A. Tuttle, secretary of the Medical Examiners of the Connecticut Medical Society, reports the written examination, held at New Haven, July 11-12, 1905. The number of subjects examined in was 7; total number of questions asked, 70; percentage required to pass, 75. The total number of persons examined was 27, of whom 23 passed and 4 failed. The following colleges were represented:

PASSED. College.	Year Grad.	Per Cent.
Yale University, (1902) 80.1, (1904) 78.7,	(1905)	78.1, 80.1, 81.4, 81.8, 86.5.
University of Pennsylvania	(1901)	78.2
Tufts Med. Coll.	(1905)	75.6
College of P. and S., New York.. (1903) 84.2;	(1905)	82
Jefferson Med. Coll.	(1905)	77.2, 81.4
University of New York	(1880)	77.6
University of Vermont	(1901)	78.4
Baltimore Med. Coll.	(1905)	79.6
University of Maryland (1901) 78.1;	(1905)	82.3
College of P. and S., Boston	(1904)	75.6
College of P. and S., Baltimore	(1905) 76.2, 79.9	80.1
College of P. and S., Cleveland	(1905)	77.8
FAILED.		
Long Island College Hospital	(1896)	73.2
Maryland Med. Coll.	(1905)	60.7
University of Michigan	(1890)	72
Tufts Med. Coll.	(1905)	68.6

Illinois May Report.—Dr. J. A. Egan, secretary of the State Board of Health of Illinois, reports the written examination held at Chicago, May 3-5, 1905. The number of subjects examined in was 16; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 417, of whom 410 passed and 7 failed. The following colleges were represented:

PASSED. College.	Year Grad.	Per Cent.
American Coll. of Med. & Surg. (1904) 75; (1905). The grades of 76 and 77 were reached by one each; 78 was reached by five; 79, by three; 80, by five; 81, by five; 83, by three; 84, by one; 85, by two; 86 by one; 87 by three; 89 and 90 by one each.		
Barnes Med. Coll	(1904)	78
Bellevue Hosp. Med. Coll	(1880)	1
Bennett Med. Coll. (1905). The grade of 78 was reached by one: 79, by four; 80, by one; 81, by two; 82, by three; 83, by four: 84, by four; 85, by one; 88, by 2.		
Cleveland Homeo. Med. Coll	(1905)	85, 86
College of Med. and Surg., Chicago (1904) 76;	(1905)	79, 81, 82, 91
College of P. & S., Chicago (1904) 78, 90 (1905). The grade of 77 was reached by one; 78, by four: 79, by three; 80, by five; 81, by nine; 82, by eighteen: 83, by fourteen; 84, by twenty-two; 85, by nineteen: 86, by sixteen; 87, by thirteen; 88, by nine; 89, by three; 90, by three; 92 and 95, by one each.		
Dearborn Med. Coll	(1905)	82, 85, 86, 86, 87, 86
Eclectic Med. Inst., Cincinnati (1885) 77;	(1905)	77
Hahnemann Med. Coll., Chicago (1905). The grade of 79 was reached by seven: 80, by three; 81, by four: 82, by eight; 83, by one; 84, by six; 85, by two; 86, 87, 88, by one each; 89, by two.		
Harvey Med. Coll	(1905)	81, 84, 88
Hering Med. Coll	(1905)	77, 80, 81, 82, 82, 82, 84, 86, 88
Illinois Med. Coll.	(1905)	77, 81, 82, 82, 83, 88
Jenner Med. Coll (1904) 82;	(1905)	76, 80, 80, 81, 83, 87
National Med. Univ., Chicago (1904) 85:	(1905)	75, 76, 77, 78, 80, 82.
Northwestern University (1905). The grades of 79, 81, 82 and 94 were reached by one each; 83 was reached by four; 84, by six; 85, by five; 86, by eight; 87, by five; 88, by nine; 89, by fourteen; 90, by eight; 91, by six; 92, by three; 93, by two.		
Rush Med. Coll. (1903) 82; (1904) 86, 87, 90, 90, 94 (1905). The grades of 81, 82 and 91 were reached by one each; 83 was reached by two; 84, by two; 85, by two; 86, by four; 87, by six; 88, by eight; 89, by five; 90, by three; 92, by three.		
Toledo Med. Coll	(1905)	82, 84, 85, 86, 86, 87
Western Med. Coll., London, Ont.	(1905)	84, 88
FAILED.		
College of Med. & Surg., Chicago	(1905)	73, 74
Illinois Med. Coll.	(1905)	65
Jenner Med. Coll	(1905)	71
Physio-Medical Coll., Indianapolis	(1887)	56

The general average attained by all representatives of the

American College of Medicine and Surgery who passed was 81.4; by representatives of Bennett Medical College, 82.2; of the College of Medicine and Surgery, Chicago, 81.8; of the College of Physicians and Surgeons, Chicago, 84.2; of Hahnemann Medical College, Chicago, 82.3; of Illinois Medical College, 82.1; of Jenner Medical College, 81.2; of National Medical University, 79; of Northwestern University, 87.6; of Rush Medical College, 88.3.

Maine July Report.—Dr. W. J. Maybury, secretary of the Maine Board of Registration of Medicine, reports the examination, partly oral and partly written, held at Augusta, July 11-12, 1905. The number of subjects examined in was 10; total number of questions asked, 100: percentage required to pass, 75. The number of individuals examined was 44, of whom 41 passed and 3 failed. The following colleges were represented:

PASSED.

College.	Year Grad.	Per Cent.
Boston University,	(1904) 84.3, 89.8, 83.4; (1905)	80.1, 77.6
Medical School of Maine	(1905)	82.4, 75.5, 84.5, 86.6, 90.2, 82.8, 78.5, 81, 93.2, 84.6, 79.3, 87.6, 77.5, 87.4, 84.6, 80.7.
College of P. & S., Boston	(1905)	80.2, 81.4
Jefferson Med. Coll	(1905)	79.3, 86.9, 78.3
Johns Hopkins University	(1905)	88.5
Albany Med. Coll	(1905)	87.2
McGill University	(1899)	77.2
Columbia University	(1892) 75; (1899)	93.2
University of Vermont	(1905)	90.1, 78
Baltimore Med. Coll	(1905)	86 8
Woman's Med. Coll., Philadelphia	(1905)	87.1
Harvard University	(1905)	81.1, 93
Medico-Chirurgical Coll., Philadelphia	(1905)	92, 83.5
University of Pennsylvania	(1905)	80.3, 90.6

The general average attained by all representatives of the Medical School of Maine who passed was 83.5.

New Hampshire July Report.—Dr. H. C. Morrison, regent of the New Hampshire State Board, reports the written examination held at Concord, July 7-8, 1905. The number of subjects examined in was 7; total number of questions asked, 70; percentage required to pass, 75. The total number of candidates examined was 20, of whom 15 passed and 5 failed. The following colleges were represented:

PASSED.

Colleges.	Year Grad.	Per Cent.
Tufts Med. Coll.	(1902) 82;* (1905)	84
Dartmouth Med. Coll.	(1904) 76; (1905) 82, 87,	83
Harvard University	(1904) 82; (1905)	88
College of P. and S., New York	(1896) 80; (1905)	86
Jefferson Med. Coll.	(1905)	79
Detroit Coll. of Medicine	(1905)	77
McGill University	(1904)	81
Johns Hopkins University	(1904)	87
Maryland Med. Coll.	(1903)	75*

FAILED.

College.	Year Grad.	Per Cent.
Laval University	(1904) 61.5,* 73.8;* (1903)	62.1
Jefferson Med. Coll.	(1905)	73.9
Illinois Med. Coll.	(1902)	73.1

*Second Examination.

Ohio June Report.—Dr. T. Windero, secretary of the State Board of Medical Registration and Examination, reports the written examinations held at Columbus, Cleveland and Cincinnati, June 13-15, 1905. The total number of candidates examined was 192, of whom 188 passed and 4 failed. The following colleges were represented:

PASSED.

College.	Year Grad.	Per Cent.
Miami Med. Coll. (1905). The grades of 94, 83 and 82 were reached by one each: 85, 84, 87, 80, 93, 90, 91 by two each; 88 was reached by three.		
Eclectic Med. Inst., Cincinnati (1881) 88; (1905). The grades of 77,* 83, 75, 85, 89 and 95 were reached by one each; 80 and 88 by two each.		
Pulte Med. Coll	(1905)	85, 85.91
Medical College of Ohio (1905). The grade of 85 was reached by four; 86, by two; 87, by five; 88, by two; 89, by three; 90, by three; 91, by one; 92, by two; 93, by four; 94, by two.		
Western Reserve Univ. (1905). The grades of 87, 89, 93 and 97 were reached by one each; the grade of 88 was reached by four; 90, by two; 91, by two; 92, by four; 96, by two. The grade attained by one individual is not stated.		
Cleveland Homeo. Med. Coll. (1904) 85; (1905) 88, 83, 89, 90, 90, 85, 79, 92, 81, 86.		
College of P. & S., Cleveland. The grades of 81, 82, 84, 87, 90, 95 and 96 were reached by one each; 89 was reached by three; 91, by two, and 92 by two.		
Ohio Med. University (1905). The grades of 81, 78, 85, 82, 92, 93 and 91 were reached by one each; 84 was reached by five; 86, by two; 87, by two; 88, by four; 89, by four; 90, by four.		
Starling Med. Coll. (1905). The grades of 76, 77, 78, 79, 80, 86, 88, and 89 were reached by one each; 75 was reached by two; 81, by four; 83, by three; 84, by three; 85, by three; 87, by two; 90, by two.		
Hahnemann Med. Coll., Philadelphia	(1905)	90
Leonard Med. Coll	(1905)	75
College of P. & S., New York	(1902)	92
Univ. of Mich. Homeo. Dept.	(1905) 88, 86,	90
Cincinnati Coll. of Med. & Surg.	(1901)	83
Queen's Med. Coll., Toronto	(1904)	81
Baltimore Med. Coll.	(1905)	89
Johns Hopkins University	(1902) 93, 90; (1905)	90
Harvard University	(1902)	83
University of Toronto	(1903)	96
Medico-Chirurgical Coll., Philadelphia	(1905)	96, 91
University of Michigan	(1905)	92
University of Pennsylvania	(1902)	75
Univ. and Bellevue Hosp. Med. Coll	(1905)	85
Jefferson Med. Coll.	(1905) 83, 88, 89,	92
University of Buffalo	(1892)	88
Women's Med. Coll. of Penn.	(1905)	95
University of Iowa	(1905)	80
Detroit Coll. of Med.	(1893)	87

FAILED.

College.	Year Grad.	Per Cent.
Eclectic Med. Inst., Cincinnati	(1905)	—
Starling Med. Coll.	(1905)	—
Ohio Med. Coll.	(1905)	—

The general average attained by all representatives of Miami Medical College, who passed, was 87.3; of Eclectic Medical Institute, 84.3; of Medical College of Ohio, 85.8; of Western Reserve University (excepting one whose percentage is not stated), 91.1; of Cleveland Homeopathic Medical College, 86.1; of Cleveland College of Physicians and Surgeons, 82; of Ohio Medical University, 86.8; of Starling Medical College, 82.8.

*Second examination.

Pennsylvania Homeopathic Report for June.—The Homeopathic Medical Society of Pennsylvania reports the written examination held at Philadelphia, June 27-30, 1905. The total number of applicants examined was 36, all of whom passed. The following colleges were represented:

PASSED.

College.	Year Grad.	Per Cent.
Hahnemann Med. Coll., Philadelphia, (1902) 76.28, 82.28, 92.28; (1905) 87.28, 89.28, 86.14, 94.14, 80.14, 92.42, 88, 92.57, 85.71, 88.57, 94.85, 87.57, 89.42, 93.14, 89.57, 84.85, 90.71, 94.71, 88.57 90.85, 88.57, 81, 92.57.		
Cleveland Homeo. Med. Coll. (1905) 93.14, 90.28, 88.28, 89, 57, 87.		
Southern Homeo. Med. Coll. (1904) 87.28;* (1905) 95.14, 92.14		
Dunham Med. College, Chicago	(1902)	99.28
Hering Med. College, Chicago	(1905)	92.71

The general average attained by all representatives of the Hahnemann Medical College of Philadelphia was 88.9.

* Second examination.

Pennsylvania Eclectic Report for June.—The Eclectic Medical Society of Pennsylvania reports the written examination, held at Harrisburg, June 27-30, 1905. The total number of candidates examined was 19, of whom 15 passed and 4 failed. The following colleges were represented:

PASSED.

College.	Year Grad.	Per Cent.
Baltimore Med. Coll.	(1905) 83.3, 80,6	80.6
Eclectic Med. Inst. Cincinnati	(1905) 78.4, 85.5	91.4
Eclectic Med. Coll. of Indiana	(1904)	80
Maryland Med. College (1904) 95;*	(1905) 81.4, 82.3	80.4
Western Pennsylvania Med Coll.	(——)	75.2**
Medico-Chirurgical Coll., Philadelphia	(1905)	82.8
Temple Med. Coll., Philadelphia	(1904)	75.7
University of Baltimore	(1904)	77.1*

FAILED.

College.	Year Grad.	Per Cent.
Baltimore Medical College	(1901)	72.3†
College of P. and S., Baltimore	(1904)	71.9††
University of Naples	(1894)	72.4
University of the South	(——)	67.4*

*Second examination.

**Seventh examination.

†Ninth examination.

††Third examination.

Rhode Island July Report.—Dr. Gardner J. Swartz, secretary of the Rhode Island State Board of Health, reports the examination held at Providence, July 11, 1905. The number of subjects examined in was 7; total number of questions asked, 70; percentage required to pass, 75. The number of applicants examined was 33, 28 of whom passed, and 5 failed. The following colleges were represented:

PASSED.

Colleges.	Year Grad.	Per Cent.
Baltimore Med. Coll.	(1905) 87,	87.4
Bellevue Hosp. Med. Coll.	(1905)	78.1
College of P. and S., Baltimore	(1905) 75.5, 76.2,	79.1
College of P. and S. Boston	(1905) 75,	85.9
College of P. and S., New York	(1905) 87.6; (1896)	83
Cornell University	(1905)	89.6
Harvard University	(1905) 84.4,	76.6
Jefferson Med. Coll.	(1905)	90.1
Long Island Coll. Hosp.	(1905)	75
Maryland Med. Coll.	(1904)	78.7
Syracuse University	(1904)	81.6
Tufts Coll. Med. Dept.	(1905) 80.6,	85.3
University Medical Coll.	(1879)	75
University of Maryland	(1905) 82.9,	75
University of Naples	(1899) 88.7,	78.9
University of Pennsylvania	(1903)	91
University of Vermont	(1898)	75
Woman's Med. Coll. of Pa.	(1901)	83.6
Yale University	(1905)	83.7

FAILED.

Colleges.	Year Grad.	Per Cent.
Baltimore Med. Coll.	(1902)	62
Baltimore University	(1905)	61.6
College of P. and S. Boston	(—) 69.1; (1904)	68
Laval University	(1905)	69.6

Vermont July Report.—Dr. W. Scott Nay, secretary of the Vermont State Board of Medical Registration, reports the written examination held at Burlington, July 11-13, 1905. The number of subjects examined in was 12; total number of questions asked, 90; percentage required to pass, 75. The total number of candidates examined was 32, all of whom passed. The following colleges were represented:

PASSED.

College.	Year Grad.	Per Cent.
University of Vermont,	(1905)	86.5, 86.2, 83.6, 82.5, 85.3, 82.2, 82.2, 88.2, 89.4, 81.11, 86.10, 84.7, 84.6, 82.3, 86.6, 84.11, 80.9, 85.11, 85.5, 86.3, 85.6, 85.
Hahnemann Med. Coll., Philadelphia	(1905)	85.3
Dartmouth Med. Coll.	(1905)	85.9
College of P. and S., Baltimore	(1905)	87.7
Albany Med. Coll	(1905)	87.7
University of Maryland	(1905)	88.2
Kentucky School of Medicine	(1904)	82.11
Tufts Medical College	(1905)	83.2
Columbia University	(1905)	87.9
Baltimore Med. College	(1905)	84.7
Laval University	(1904)	77.6*

The general average attained by all representatives of the University of Vermont was 84.7.

* Second examination.

The Public Service

Army Changes.

Memorandum of changes of stations and duties of medical officers, U. S. Army, week ending Aug. 12, 1905:

Skinner, George A., asst.-surgeon, left Fort Harrison, Mont., on practice march.

Moseley, E. B., deputy surgeon-general, left chief surgeon's office, Denver, on thirty days' leave of absence.

Yost, John D., asst.-surgeon, granted thirty days' leave of absence.

Bourke, James, asst.-surgeon, relieved from temporary duty at Fort McHenry, Md., and ordered to Fort Howard, Md., for temporary duty during the absence of Asst.-Surgeon Compton Wilson, on whose return to Fort Howard, Lieut. Bourke will return to duty at the Medical Supply Depot, New York City.

Kiersted, Henry S., asst.-surgeon, relieved from duty at Presidio of Monterey, Cal., and ordered to Fort St. Michael, Alaska, for duty.

Pierson, Robert H., asst.-surgeon, relieved from duty at Fort St. Michael, Alaska, and ordered to Fort Gibbon, Alaska, for duty.

Hathaway, L. M., asst.-surgeon, relieved from duty at Fort Gibbon, Alaska, and ordered to proceed to Seattle, Wash., and report by telegraph to the military secretary of the Army for further orders.

La Garde, Louis A., surgeon, leave of absence extended thirty days.

Bispham, William N., asst.-surgeon, in addition to his other duties at Fort Logan, Colo., is announced as temporarily in charge of chief surgeon's office, Department of Colorado, during the temporary absence on leave of Lieut-Col. Edward B. Moseley, deputy surgeon general.

Borden, William C., surgeon, granted thirty days' leave of absence about Aug. 8, 1905.

Smart, William M., asst.-surgeon, having reported arrival at Seattle, Wash., is assigned to duty at Fort Caswell, N. C.

Buck, C. D., asst.-surgeon, left with recruits from Jefferson Barracks, Mo., en route to Fort Walla Walla, Wash.

Marshall, John S., examining and supervising dental surgeon, relieved from duty at the Presidio of San Francisco, and assigned to duty at the Army General Hospital, Presidio of San Francisco.

Van Kirk, Harry H., contract surgeon, granted leave of absence for one month from Fort Sill, Okla.

Long, Charles J., dental surgeon, left Fort Yellowstone, Wyo., and arrived at Fort Lincoln, N. D., for duty.

George, William R. S., contract surgeon, arrived at New York City, and, having been relieved from duty in Porto Rico, proceeded to Fort Monroe, Va., for duty.

Vaughan, Milton, contract surgeon, left Fort Douglas, Utah, and arrived at Fort Crook, Neb., for duty.

Tukey, William H., contract surgeon, granted leave of absence for two months.

Warwick, Clarence A., contract surgeon, arrived at San Francisco, Cal., and availed himself of leave of absence for four months from the Philippines Division.

Brown, Wilmont E., contract surgeon, granted leave of absence for two months.

Suggs, Frank, contract surgeon, relieved from further duty in the Philippines Division, and ordered to duty at Fort Mansfield, R. I., at the expiration of his present sick leave of absence.

Slater, Ernest F., contract surgeon, returned from leave of absence to duty at Fort Hancock, N. J.

Clayton, George R., contract surgeon, ordered from Columbus Barracks, Ohio, to San Francisco, Cal., with recruits, and to proceed thence to the Philippines Division for duty.

Lauderdale, Clarence E., dental surgeon, granted leave of absence for one month.

Macy, Fred S., contract surgeon, returned to Allegheny Arsenal, Pa., from leave of absence.

Kieruiff, H. Newton, contract surgeon, relieved from duty in the Department of California, and ordered to duty in the Philippines Division.

Navy Changes.

Changes in the Medical Corps, U S. Navy, for the week ending Aug. 12, 1905:

Wise, J. C., medical director, orders of July 29, 1905, modified; ordered to report to the Surgeon-General of the Navy, Aug. 10, 1905, for duty in command of the Naval Medical School.

Boyd, J. C., medical director, ordered to additional duty as president of the Naval Examining Board, and Naval Medical Examining Board, Naval Medical School, Washington, D. C.

Sellers, F. E., asst.-surgeon, G. S. Hathaway, appointed asst.-surgeons, with rank of lieutenant (junior grade), from Aug. 1, 1905.

Spratling, L. W., surgeon, ordered to the Naval Station, New Orleans.

Taylor, J. L., asst.-surgeon, detached from the Naval Hospital, Pensacola, Fla., September 29, and ordered to Washington, D. C., October 2, for course of instruction at the Naval Medical School.

Public Health and Marine-Hospital Service.

List of changes of station and duties of commissioned and non-commissioned officers of the Public Health and Marine-Hospital Service for the seven days ending Aug. 9, 1905:

Irwin, Fairfax, surgeon, leave of absence for one month from Aug. 8, 1905, granted by Bureau letter of July 12, 1905, revoked.

Blue, Rupert, P. A. surgeon, to report at Washington, D. C., for special temporary duty.

Blue, Rupert, Currie, D. H., Greene, J. B., and McMullen, John, P. A. surgeons, and Rucker, W. C., Ebert, H. G., Smith, F. C., and Steger, E. M., asst.-surgeons, to proceed to New Orleans and to report to Surgeon J. H. White for special temporary duty.

Lavinder, C. H., [illegible] 'd to Fontainebleau, Miss., and assume [illegible] mp.

Stansfield, H. A., [illegible] from duty in the Canal Zone, and directed to proceed to New York and report arrival by wire.

Amesse, J. W., P. A. surgeon, to proceed to Cairo, Ill., and assume temporary command of the service.

Ashford, F. A., asst.-surgeon. Bureau order of August 7, directing to proceed to New Orleans revoked, and directed to proceed to Immigration Depot, New York, and report to Suregon G. W. Stoner for duty.

McKeon, F. H., asst.-surgeon, relieved from duty at U. S. Marine Hospital, New Orleans, and directed to report to Surgeon J. H. White for special temporary duty.

Sweet, E. A., Frost, W. H., and Mullan, E. H., asst.-surgeons, to proceed to New Orleans and report to Surgeon J. H. White for special temporary duty.

Frost, W. H., asst.-surgeon, to proceed to Norfolk, Va., and assume temporary charge of the service.

Olsen, E. T., asst.-surgeon, relieved from duty at Immigration Depot, New York, and directed to proceed to New York (Stapleton), and report to medical officer in command for duty and assignment to quarters.

Boyd, F., acting asst.-surgeon, granted leave of absence for thirty days from Aug. 1, 1905.

Hunter, S. B., acting asst.-surgeon, granted leave of absence for thirty days from Aug. 1, 1905.

Keatley, H. W., acting asst.-surgeon, granted leave of absence for two days from Aug. 6, 1905, under the provisions of Paragraph 210 of the Regulations.

Safford, M. V., acting asst.-surgeon, granted leave of absence for four days from Aug. 4, 1905, under the provisions of Paragraph 210 of the Regulations.

Stewart, W. J. S., acting asst.-surgeon, granted leave of absence for thirty days from Oct. 1, 1905.

Tarbell, B. C., acting asst.-surgeon, granted leave of absence for five days from Aug. 20, 1905.

Townsend, W., acting asst.-surgeon, granted leave of absence for five days from Aug. 7, 1905.

Health Reports.

The following cases of smallpox, yellow fever, cholera and plague have been reported to the Surgeon-General, Public Health and Marine-Hospital Service, during the period from July 29 to Aug. 5, 1905:

SMALLPOX—UNITED STATES.

California: Los Angeles, July 15-22, 2 cases.
Illinois: Chicago, July 22-27, 6 cases.
Louisiana: New Orleans, July 15-29, 1 case, 4 deaths.
Michigan: Grand Rapids, July 22-29, 5 cases.
Missouri: St. Joseph, July 15-22, 1 case.
Montana: Butte, July 16-23, 1 case.
New Hampshire: Nashua, July 15-22, 1 case.
Ohio: Cincinnati, July 21-28, 2 cases; Toledo, July 15-22, 6 cases.
Pennsylvania: York, July 22-29, 1 case.

SMALLPOX—FOREIGN.

Argentine: Buenos Ayres, April 1-30, 43 deaths.
France: Paris, July 8-15, 6 cases, 2 deaths; St. Etienne, June 1-30, 2 cases.
Great Britain: London, July 8-15, 1 case.
India: Bombay, June 27-July 4, 7 cases; Karachi, June 25-July 2, 2 cases; Madras, June 24-30, 2 cases.
Russia: Moscow, July 1-8, 11 cases, 20 deaths; Odessa, June 17-July 15, 26 cases, 3 deaths; St. Petersburg, July 1-8, 5 cases, 3 deaths.
Spain: Barcelona, July 10-20, 4 deaths.
Turkey: Constantinople, July 8-16, 5 deaths.

YELLOW FEVER—UNITED STATES

Louisiana: Morgan City, July 3, 1 case; Shreveport, Aug. 1, 1 case; New Orleans, July 21-Aug. 3, 308 cases, 59 deaths.
Mississippi: Gulf Quarantine, July 22-Aug. 3, 14 cases, 1 death; Lumberton, July 28, 1 case; Sumrall, Aug. 2, 1 case.

YELLOW FEVER—FOREIGN.

Brazil: Sao Paulo, June 15, 1 case.
Ecuador: Guayaquil, June 27-July 4, 2 deaths.
Guatemala: Livingston, July 8-15, 3 cases.
Honduras: Puerto Cortez, June 14-21, 2 deaths.
Mexico: Tierra Blanca, July 16-22, 1 case, 1 death; Vera Cruz, July 16-29, 2 cases.
Panama: Colon, July 10-17, 1 case; Panama, 9 cases, 3 deaths.

PLAGUE.

China: Hongkong, May 13-20, 20 cases, 18 deaths.
India: General, June 10-17, 5,413 cases, 4,883 deaths; Bombay, June 24-July 4, 58 deaths; Karachi, June 25-July 2, 34 cases, 34 deaths; Madras, June 24-30, 1 death.
Japan: Formosa, June 20-30, 39 cases, 40 deaths.
Peru: Callao, June 11-20, 1 case, 1 death; Lima, June 11-20, 3 cases, 1 death; Mollendo, June 11-20, 2 cases, 1 death; Payta, June 11-20, 2 cases, 1 death.
Straits Settlements: Singapore, June 10-17, 2 deaths.

CHOLERA.

India: Madras, June 24-30, 1 death.

MEDICAL SCHOOLS OF THE UNITED STATES

Below is given a brief description of every college in the United States that is legally chartered to confer the degree of doctor of medicine, and whose diploma is recognized by at least one state licensing board. The list includes the sectarian as well as the regular colleges, as their graduates are physicians in the eyes of the law. The information given is, as a rule, obtained from the catalogues and has been submitted to the dean of each school for his inspection and approval. Colleges which belong to the American or the Southern Medical College Association or other organization of colleges have requirements for admission of students according to the rules of these associations, unless their requirements are higher, in which case a statement is made to that effect. Extracts from these rules are given at the close of the list of colleges.

ALABAMA.

Alabama, population 1,828,697, has two medical colleges, the Medical College of Alabama and the Birmingham Medical College, located in Mobile and in Birmingham. The population of each city is over 38,000, and board and room may be obtained from $12 to $20 per month.

Birmingham.

BIRMINGHAM MEDICAL COLLEGE.—This school was incorporated in 1894 and is situated in Birmingham, a manufacturing town of 38,415. The clinical advantages are good. The Hillman, St. Vincent's, Pratt and County hospitals are accessible to the students. The laboratories are well equipped. There are 17 professors and 12 assistants, total 29. The school is a member of the Southern Medical College Association. The course of instruction embraces four separate sessions of six months each. The fees are $75 for each of the first three years and $105 for the fourth. The Dean is Dr. B. L. Wyman. Registration, 1904-5, 75, graduates, 16. Next session opens Oct. 3, 1905, and closes April 1, 1906.

Mobile.

MEDICAL COLLEGE OF ALABAMA.—This is the Medical Department of the University of Alabama, organized in 1859. The City Hospital furnishes free clinical material. The faculty consists of 8 professors and 12 lecturers, 20 in all. It is well equipped with building, laboratories, dispensary, etc. It is a member of the Southern Medical College Association. The course of study covers four years of six months each. The total fees for each of the first three years is $100; for the fourth year. $125. The Dean is Dr. George A. Ketchum. Total registration, 1904-5, 170; graduates, 41. The fortieth session will begin Oct. 1, 1905, and will close April 10, 1906.

ARKANSAS.

Arkansas, population 1,311,564, has one medical college, located in Little Rock. Board and lodging costs from $13 to $18 per month.

Little Rock.

UNIVERSITY OF ARKANSAS MEDICAL DEPARTMENT.—This college is located at Little Rock, population about 60,000. It was organized in 1879 as the Arkansas Industrial University Medical Department. Hospital facilities are furnished by Logan H. Roots Memorial Hospital, St. Vincent's Infirmary and Pulaski County Hospital, the latter having a capacity of 200 beds. The teaching body consists of 15 professors and 20 lecturers and assistants, total 35. Dr. F. L. French, Little Rock, is Secretary. The fees are: Matriculation $5, paid but once; annual fees $60, and graduation $25. Total number of students at last session, 220; graduates, 32. The next course of lectures begins Oct. 16, 1905, and ends April 14, 1906.

CALIFORNIA.

California, population 1,485,053, has eight medical colleges. Five are located in San Francisco, a city of about 400,000 inhabitants. They are Cooper Medical College, Medical Department of the University of California, California Medical College, Hahnemann Medical College of the Pacific, and the College of Physicians and Surgeons. The clinical facilities of San Francisco are good; board and lodging can be obtained for from $20 to $30 a month. The College of Medicine of the University of Southern California is situated in Los Angeles, population 102,479. Board and lodging can be obtained in that city for $4 a week and upward. The Oakland College of Medicine and Surgery is in Oakland.

Oakland.

OAKLAND COLLEGE OF MEDICINE AND SURGERY.—The fourth session of this school will begin Aug. 15, 1905, and end May 15, 1906. The length of the course has been changed from eight to nine months, beginning with the sessions of 1905-6. The Registrar is Dr. Edward N. Ewer. The faculty numbers 28. Tuition is about $115 yearly. There were 12 students last session, divided the first three years. There has not been a graduating class as yet.

San Francisco.

COOPER MEDICAL COLLEGE.—This school was organized in 1858, though its present name was not adopted until 1882. The faculty consists of 17 professors and 44 lecturers, instructors, etc., 61 in all. Lane Hospital, adjoining the college, the City and County Hospital, containing 464 beds, and the college dispensary furnish clinical material. The requirements for admission are a certificate showing that applicant has passed the regular examination for admission to the University of California, or its equivalent, or graduation from an accredited high school or academy, or its equivalent. The college itself does not hold entrance examinations. The college building supplies large laboratory and lecture-room facilities. The curriculum covers a graded course of four years of eight and a half months each. Fees: Matriculation, $5; course fee for each year, $150; laboratory fee for each year, $10; breakage deposit each year, $10; graduation fee, $25; no other charges. The Dean is Dr. Henry Gibbons, Jr. Total registration for 1904-5 was 155; graduates, 37. The next session opens Aug. 15, 1905, and will close May 10, 1906.

UNIVERSITY OF CALIFORNIA, MEDICAL DEPARTMENT.—This department of the State University was organized in 1872, and has a faculty composed of 20 professors, 39 associates and assistants, a total of 59. The City and County Hospital, which admits students of this school not only to the clinics proper, but also to its wards for study, and the college dispensary furnish good clinical material. The course covers graded work for four years of nine months each. This school is a member of the Association of American Medical Colleges. In 1905 two full college years' work will be required of all applicants for admission. The fees are: Matriculation, $5; tuition, $150 each year; laboratory fees extra. The Dean is Dr. Arnold A. D'Ancona. Total registration for 1904-5 was 104; graduates, 17. The thirty-third session opens Aug. 15, 1905, and will close May 15, 1906.

COLLEGE OF PHYSICIANS AND SURGEONS OF SAN FRANCISCO.—This school was organized in 1896 and has a faculty of 22 professors and 24 associate professors and teachers, a total of 46. The hospital facilities consist of the City and County Hospital, the California General Hospital, with 50 beds, and St. Winifred Hospital, with 50 beds. The daily clinics at the new college building furnish abundant material of every description. Applicants for matriculation must show an equal amount of work done or pass a satisfactory examination in English, history and go [illegible] physics, mathematics and Latin, grammar a [illegible] college building recently completed is well [illegible] atories and lecture rooms. This college now conducts a continuous course of medical instruction. Each year is divided into four quarters of three months each, and known as the autumn, winter, spring and summer quarters. Students may enter at the beginning of any quarter. Attendance on 12 quarters will be required, and at least 45 months must elapse between the beginning of the first course and the time of graduation. Fees, $30 per quarter. The Dean is Dr. D. A. Hodghead. Registration for 1904-5 was 144; graduates, 29. The autumn quarter opens Sept. 1, 1905, and closes May, 1906.

HAHNEMANN MEDICAL COLLEGE OF THE PACIFIC.—Homeopathic. This school was organized in 1884, and has a faculty of 19 professors and 23 lecturers, instructors, etc., in all 42. The Pacific Homeopathic Polyclinic, the Homeopathic Sanatorium, the San Francisco Nursery for Homeless Children, Marie Kip Orphanage, accommodating, respectively, 45, 75 and 120 beds; Fabiola Hospital and the City and County Hospital, furnish the clinical material for study. Matriculants must possess the equivalent of a high school education. One year after entrance is permitted in which the student may complete conditions in Latin. The college is registered and accredited with New York State Regents and the Illinois and Michigan State Boards of Health. The course includes four years of seven months each. Total fees for the first year, $155, and $100 for each of the other three years. The Dean is Dr. James W. Ward, 606 Sutter St., San Francisco. Total registration for 1904-5 was 34; graduates, 10. The twenty-third session begins Sept. 1, 1905, and will close May 1, 1906.

CALIFORNIA MEDICAL COLLEGE.—Eclectic. This school was organized in 1884 and has a faculty of 19 professors and 25 lecturers, and instructors, a total of 26. The clinical material is supplied by the Buena Vista and City and County hospitals. Applicants for admission not holding diploma or certificate are examined. The course has been extended to cover four years of eight months each. Total fees are about $110 for each of the first three years and $40 for the fourth year. The Dean is Dr. D. Maclean. Total registration for 1904-5 was 40; graduates, 8. The next session begins Oct. 2, 1905, and ends May 16, 1906.

Los Angeles.

UNIVERSITY OF SOUTHERN CALIFORNIA COLLEGE OF MEDICINE.—This school was organized in 1885, and has a faculty of 29 professors and 19 instructors, 48 in all. The County Hospital, having 200 beds, the Sisters' Hospital of 150 beds, the Children's Hospital of 20 beds, and a college dispensary furnish clinical material. Applicants for admission must give evidence of matriculation in a university or graduation from an accredited high school, academy, preparatory school or a California State Normal School, or a certificate from an appointed member of a high school faculty that applicant has filled the requirements of the Association of American Medical Colleges, of which this college is a member. This college gives no admission examinations. The building is provided with laboratories, amphitheater and lecture rooms, and a new clinical laboratory, erected in 1904, costing, with equipment, $20,000. A graded course, covering four years of thirty-two weeks each, is offered. The total fees for the first year are $145; second and third, $150 each, and $40 for the fourth year. The Dean is Dr. Walter Lindley. Total registration for 1904-5 was 115; graduates, 24. The next session opens Oct. 5, 1905, and closes June 16, 1906.

College of Physicians and Surgeons.—This school was organized in 1903. The length of each course is eight months. The faculty numbers 30 in all, 21 professors and 9 assistants. The registration for 1904-5 was 25; graduates, 13. The next session begins Oct. 4, 1905, and ends June 4, 1906. The Secretary is Dr. Benjamin F. Church, Frost Bldg., Los Angeles.

COLORADO.

Colorado, with a population of 539,700, has three medical colleges. Two of these, Denver and Gross College of Medicine and Denver Homeopathic College are in Denver, which has a population of about 175,000, the other, the Colorado School of Medicine, is at Boulder (population 6,150). The clinical facilities in Denver available to the two colleges are the Denver County Hospital, which has a capacity of 300 beds. St. Joseph's Hospital, with 300 beds, and St. Luke's Hospital, with 75 beds. The Public Library contains 10,000 volumes on medicine. Board can be obtained in Denver for $5 a week and upward.

Denver.

The Denver and Gross College of Medicine.—This is the Medical Department of the University of Denver, and was organized in 1902 by the union of the Gross Medical College (organized 1887) and the Denver College of Medicine (organized 1880). The clinical advantages are the college dispensary, the Denver County Hospital, St. Luke's Hospital, St. Anthony's Hospital, St. Joseph's Hospital, National Jewish Hospital for Consumptives, Home for Dependent Children and the City Contagious Hospital and Mercy Sanitarium. The faculty is made up of 38 professors, 43 assistants and instructors, a total of 81. Its location is central, and the buildings are well arranged for laboratory, dispensary and didactic work. The course is graded and covers four years of eight months. The college is a member of the Association of American Medical Colleges. Final examinations at the end of each year are held. Fees for the first year are $115. For the second year, $116. Third year, $101. Fourth year, $126. Total registration, 1904-5 was 115; graduates, 32. The twenty-fourth session will begin Sept. 10, 1905, and close May 18, 1906. The Dean is Dr. S. G. Bonney.

Denver Homeopathic College.—This college, organized in 1894, beside clinical privileges in the hospital of the city and county of Denver, has exclusive privileges for clinical work in the Denver Homeopathic Hospital, the Haven and the Belle Lenox Nursery. The faculty numbers 26 professors and 7 lecturers and instructors, 33 in all. The requirements for admission are, "possession of a diploma from a literary college, university, an academy, a normal or high school; a first-grade teacher's certificate, or a previous matriculation at some reputable literary or medical college." The course of study consists of four years of seven months each; monthly examinations are held in each subject. A five-year scholarship may be had for $300 payable in advance, otherwise the tuition is $100 a year for the first, second and third years. Senior year, $75. There is a matriculation fee of $5, payable once. The Dean is Dr. James P. Willard. Total registration for 1904-5 was 29; the number of graduates, 6. The eleventh session begins in September, 1905, and will close April, 1906.

Boulder.

Colorado School of Medicine.—This is the Medical Department of the University of Colorado, and was opened in 1883. The University Hospital, under the control of the state, is equipped to accommodate 40 patients, and furnishes free clinical material. Both hospital and dispensary clinics are offered and the sanatorium located at Boulder offers additional advantages in this line. The faculty embraces 18 professors and 9 lecturers and assistants, a total of 27. The laboratories are well equipped and commodious. A separate building is devoted to the study of anatomy and another one is used for medical work exclusively. A complete four-year course of study in a recognized high school, or its equivalent, is required for admission. This school is a member of the Association of American Medical Colleges. The work embraces a graded course of four years of nine months each. The tuition is $50 per year; there are no other fees. The Dean is Dr. Luman M. Giffin. Total registration for 1904-5 was 54; graduates, 6. The twenty-fourth session begins Sept. 11, 1905, and closes June 7, 1906.

CONNECTICUT.

Connecticut, with a population of 908,420, has only one medical college, located in New Haven, population, 115,000. Board and lodging cost $4.50 and upward per week.

New Haven.

Yale Medical School.—This is the Department of Medicine of Yale University. In 1810 a charter was granted for the establishment of this school, and in 1813 it was organized as the Medical Institution of Yale College. In 1879 a new charter changed the name to the one now used, and in 1884 the Connecticut Medical Society, which, from the granting of the first charter, had taken an active part in its control, surrendered its authority, and the University authorities assumed full control. The clinical advantages are embraced under the New Haven Hospital, which contains 175 beds and is the general hospital for New Haven; the Springside Hospital, which is connected with the city almshouse, and the State Hospital for the Insane, located in Middletown, about twenty-five miles distant, which, with its 1,800 patients, offers an opportunity for special instruction in insanity in addition to the clinics. Beside these, the University has just completed a $100,000 building for the dispensary service, which offers good material for clinical teaching. The faculty embraces 14 professors, 5 lecturers, 10 instructors and 19 assistants, a total of 48. The lecture rooms and laboratories are large and well equipped. Matriculants are admitted without examination, provided that they have received a degree in arts or sciences, that they present certificates showing that they have successfully prosecuted the subjects of the examination at some college, high school, academy or preparatory school approved by the faculty, or that they have passed matriculation examinations equivalent to those required at some approved professional school. This school is a member of the Association of American Medical Colleges. The course covers a four-year graded curriculum, nine months constituting a school year; the first two years the fundamental branches are studied, the third year is devoted to a systematic teaching of medicine, surgery, obstetrics and pharmacology, and in the fourth year clinical work, with medicine, surgery and the specialties, is presented. The fees are $150 each year; in the first year there are additional fees amounting to $18, and in the second, $8, and there is a graduation fee of $10. The Dean is Dr. Herbert E. Smith, New Haven. During the session of 1904-5 there were 139 matriculants and 22 graduates. The ninety-third session opens Sept. 28, 1905, and closes June 27, 1906.

DISTRICT OF COLUMBIA.

Washington, population 278,718, has three medical colleges: George Washington University Department of Medicine, *Georgetown University School of Medicine, and Howard* University Medical Department. Washington offers to the student of medicine many advantages. The Army Medical Museum, the Museum of Hygiene, the National Museum, the library in the Surgeon-General's office, the Toner Medical Library and Museum of Hygiene, in all over 125,000 volumes on medicine, open to the medical student a most profitable field. The clinical advantages offered by the various hospitals are good. Owing to the many boarding houses and hotels, board and lodging can be had at reasonable rates.

Washington.

The George Washington University, Department of Medicine.—This school was organized in 1821 as the Department of Medicine of Columbian College, which in 1873 became Columbian University, and in 1904, by an act of Congress, changed its name to the George Washington University. In connection with the Department of Medicine is the University Hospital, established and maintained to afford clinical facilities for the students of the school. Beside the University Hospital, the Garfield Hospital, the Children's Hospital, the Central Dispensary and Emergency Hospital, the Providence Hospital, the Columbia Hospital, the Episcopal Eye and Ear Hospital, the U. S. Government Hospital for the Insane, and the Lutheran Eye and Ear Infirmary afford additional opportunities and are utilized for clinical instruction under the supervision of those members of the faculty who are on the visiting staffs of these institutions. Attendance on clinics is obligatory on third and fourth-year students. The faculty is composed of 34 professors and 30 demonstrators, instructors and assistants. This school is a member of the Association of American Medical Colleges. The laboratories are modern and equipped with all the needed apparatus *for thorough work and instruction. Facilities are also* provided for post-graduate and research work. The course of instruction is graded and extends through four years, each scholastic year consisting of eight months. Written and practical examinations are held during the term and written and oral in all subjects at the end of the school year. The total fees for the first year are $142; for the second year, $117; for the third year, $112, and for the fourth year, $122. A breakage deposit of $10 is required. The Dean is Dr. W. F. R. Phillips, 1607 16th St. N. W. New and commodious buildings were erected and occupied in 1902. The total registration of students for the session of 1904-5 was 298; graduates, 69. The eighty-fourth session begins Sept. 27, 1905, and closes June 6, 1906.

Georgetown University School of Medicine.—This school organized in 1850, controls the Georgetown University Hospital, which affords excellent facilities for clinical teaching and ward classes. Clinics are also held for the benefit of the students in Providence Hospital, containing 500 beds, at the Government Hospital for the Insane, containing over 2,000 beds; in the Children's Hospital, the Central Dispensary, Emergency Hospital and the Garfield Hospital. Attendance on clinical instruction is obligatory in the third and fourth years. The faculty contains 26 professors, 27 instructors and assistants, total 53. This school is a member of the Association of American Medical Colleges. The building is conveniently located and contains spacious and well-ventilated lecture rooms, laboratories and library; the laboratories are equipped with the most approved instruments and appliances. The complete course of study extends over four terms of eight months each. Examinations are held at the end of each session. The fees are $110 each year. The Dean is Dr. George M. Kober, 1600 T St. The registration for 1904-5 was 127; graduates, 16. The next term opens on Sept. 28, 1905, and ends May 31, 1906.

Howard University Medical Department.—This institution was organized in 1867, and "in conformity with the spirit of the organic law of the University, is open to all, without regard to sex or race, who are qualified by good moral character, proper age and suitable education." The removal of any racial distinction has been taken advantage of by colored students, who compose a majority of tho[illegible] a number of white students are also receivir[illegible] reedman's Hospital is a general hospital of [illegible] comprises 17 professors and 16 lecturers and assistants, 33 in all. This college is a member of the Association of American Medical Colleges. Students are required to attend four courses of lectures in separate years of nine months each. The fees of each session are $80, plus $2 per part for dissecting material, and $10 for graduation. Board can be had at the school dining hall for $9 a month, and a room in the dormitory for $15 a term. The Dean is Dr. Robert Reyburn, 2129 F St. Registration for 1904-5 was 153; graduates, 32. The thirty-eighth session begins Oct. 2, 1905, and closes June 1, 1906.

GEORGIA.

Georgia, population 2,216,331, has three medical colleges: Medical College of Georgia, located in Augusta (population 39,441); Atlanta College of Physicians and Surgeons, and Georgia College of Eclectic Medicine and Surgery, both in Atlanta (a manufacturing city of 89,872 population). Board and lodging may be obtained for from $3 to $5 per week.

Augusta.

University of Georgia Medical Department.—This school was organized as a medical academy in 1829, and in 1873 was made the Medical Department of the University of Georgia. Its faculty includes 12 professors and 13 assistants, 25 in all. The course is four years of six months each. Applicants for admission must, by examination, certificate or diploma, show that they possess educational qualifications equal to those required for second grade teachers in public schools; if they are deficient on examination, however, they are admitted, and they may remove the conditions any time before they appear for graduation. The City Hospital, with 130 beds; Lamar Hospital, with 80 beds; the Polyclinic and the Hospital for Contagious Diseases supply clinical material. Fees for the first two years are $75 each; third year, $100, and $130 for the last year. The Dean is Dr. DeSaussure Ford. Total enrolment for 1904-5 was 108; graduates, 14. The seventy-fourth session begins Oct. 1, 1905, and closes April 1, 1906.

Atlanta.

Atlanta College of Physicians and Surgeons.—This school was formed in 1898 by the consolidation of the Atlanta Medical College, organized in 1854, with the Southern Medical College, organized in 1879. It has a faculty of 13 professors and 30 assistants, a total of 43. Clinical facilities are furnished by the Grady Hospital, which is the general hospital for Atlanta, clinics are free to the graduating class. First course students are required to "give satisfactory evidence to the faculty of such educational qualifications as will be deemed necessary for the successful prosecution of their medical studies. These requirements will be similar to those of other reputable medical colleges in the country." The *course of study covers four years of six months each* and is graded. The buildings are large and a new building for practical anatomy has been added. Fees: First and second years, $75 each; *third and fourth, $100 each.* The Dean is Dr. W. S. Kendrick, 71 Washington St. Total registration of students for 1904-5 was 250; graduates, 48. Next session begins Oct. 4, 1905, and closes April 5, 1906.

Georgia College of Eclectic Medicine and Surgery.—This school was organized in 1839, and has a faculty of 16. The college dispensary, Grady Hospital and Georgia Eclectic Hospital furnish clinical material. Applicants for admission must adhere to the requirements established in the National Confederation of Eclectic Colleges, of which this college is a member. The curriculum covers four years of six months each. The Proctor is Dr. W. M. Durham, 77½ Peachtree St. Total number of students for 1904-5 was 53; graduates, 14. The next session opens Oct. 4, 1905, and closes April 4, 1906.

ILLINOIS.

Illinois, population, 4,821,550, has 13 medical colleges, all located in Chicago, a city of about 2,000,000 inhabitants, and are as follows: Rush Medical College, Northwestern University Medical School, Hahnemann Medical College, Bennett College of Eclectic Medicine and Surgery, College of Physicians and Surgeons, Hering Medical College, Jenner Medical College, Illinois Medical College, American Medical Missionary College, College of Medicine and Surgery, National Medical University, American College of Medicine and Surgery, and Dearborn Medical College. Room and board cost $3 a week and upward.

Colleges in Illinois have to admit students in conformity with the minimum requirements of the Illinois State Board of Health, as follows: "A diploma or certificate of graduation from a high school; or a certificate signed by a principal of a regularly organized high school or by the examiner of the faculty of a recognized literary or scientific college or university, or by the state superintendent of public instruction, or a superintendent of public schools, of having successfully passed an examination in all the several branches embraced in the curriculum of a four years' high school course. The matriculation examination shall not be conducted by any member of the faculty of the medical college. The Illinois State Board of Health will require each applicant for a state certificate to present documentary evidence of his preliminary education, together with his medical diploma, when taking the examination of the board." These conditions will govern all persons admitted to the freshman year on or after Jan. 1, 1903.

Chicago.

Rush Medical College.—This school was founded in 1837, organized in 1843, was the medical department of Lake Forest University from 1887 to 1898, and in the latter year became affiliated with the University of Chicago. The faculty is composed of 64 professors, 170 associates, instructors, etc., a total of 234. Good clinical facilities are furnished by Cook County Hospital, caring for about 20,000 patients yearly; Presbyterian Hospital, with 250 beds; a college dispensary, and an obstetric department. In addition to these, extramural clinical courses are offered at the West Side Hebrew Dispensary, St. Luke's Hospital, St. Anthony's Hospital, the Alexian Brothers' Hospital, Illinois Charitable Eye and Ear Infirmary and Chicago Isolation Hospital. Bedside instruction is given. The requirements for admission are those of admission to the better universities or colleges, and, in addition thereto, two years of college work. This college work must have included thorough courses in college chemistry (both inorganic and organic), college physics and biology, all with laboratory work, a reading knowledge of German and French. By the addition of a recently completed seven-story building, the facilities for clinical instruction are largely increased. The laboratories and their equipment are unexcelled. The curriculum covers graded work for four years of three quarters each, a quarter being three months. A fifth year, consisting of a hospital interneship or of a fellowship in one of the departments is offered, but, for the present, is optional. A continuous session is held, but credit for more than three quarters can not be obtained in any calendar year. A combined course for six years confers degrees of both science and medicine. All freshmen and sophomore studies are given at the University of Chicago. The total fees are $180 this year. Students in continuous attendance, i. e., three quarters in twelve months, may complete their course by paying the fees in vogue when they first entered the college. A matriculation fee of $5 is paid but once, and there are incidentals amounting to from $2 to $5 annually. The Deans are Dr. Frank Billings, 100 State St., and Dr. John M. Dodson, 34 Washington St. Total registration, 1904-5, was 522; graduates, 112. The fiscal year begins July 1; final examinations are held at the end each quarter.

College of Physicians and Surgeons.—This school was organized in 1881, and in 1896 became the Medical Department of the University of Illinois. The faculty is composed of 39 professors, 105 assistants and instructors, a total of 144. The West Side Hospital, containing 125 beds; Cook County Hospital, and a college dispensary and maternity clinic supply most of the clinical material, but under certain conditions students of this school are admitted to the following hospitals for clinical study: Augustana, Baptist, Chicago, Woman's, Samaritan, Alexian Brothers', St. Mary's, and the Chicago Lying-in. This school is a member of the Association of American Medical Colleges. A magnificent building has recently been added to the college, and the laboratory, amphitheater and lecture-room space and equipment are excellent. The collegiate year is divided into two terms; the winter term of thirty-six weeks and the summer term of twelve weeks, of actual teaching. Attendance on the winter term is required in order to secure credit for a year's work, and attendance on four winter terms is required for graduation. Attendance on the summer term is optional, and the work is supplementary to the work of the winter term. Students may obtain credit for work done in certain branches, but attendance on this term does not apply on the required thirty-six months' attendance necessary for graduation. The fees are $145 each for the first two years, $130 for the third and $160 for the fourth year. The Dean is Dr. William E. Quine, 103 State St. Total registration for 1904-5 was 654; graduates, 213. The fall term begins Sept. 26, 1905, and ends June 5, 1906.

Northwestern University Medical School.—This school was organized in 1859 as the Medical [illegible] iversity, became independent as the Chicago [illegible] , and in 1869 assumed its present relation [illegible] of Northwestern University. The faculty [illegible] and 75 assist[illegible] with 225 beds; [illegible] 400 beds; Provident Hospital, 100 b[illegible] nd a college free dispensary furnish [illegible] udy to students of this college exclus[illegible] ople's, and the Chicago Lying-in hospitals are also open to them for study. Applicants for admission must, by diploma, certificate or examination, show possession of the educational requirements required to enter the College of Liberal Arts of Northwestern University. This school is a member of the Association of American Medical Colleges. The laboratory and lecture-room facilities are ample and the equipment is good. The course of study covers graded work for four years of thirty-six weeks each. Optional summer laboratory and clinical courses are also given. Final examinations are held at the end of each semester. The fees for each year are $175, and a matriculation fee of $5, paid once, is charged. The Dean is Dr. N. S. Davis, Chicago Savings Bank Bldg. The total registration for 1904-5 was 593; graduates, 143. The next session opens Oct. 3, 1905, and closes June 1, 1906.

American Medical Missionary College.—This school was organized in 1895 and has the primal object of educating men and women as missionary physicians. The faculty numbers 26. The didactics and laboratory work, covering the first two years, are carried on at Battle Creek, Mich., and the clinical studies in Chicago. A hospital with 20 beds, in connection with the college, together with a free college dispensary with an obstetric department, supply material for practical work. The college is a member of the Association of American Medical Colleges. The course covers four years of nine months each. Total fees are $125 for each of the four years. The Secretary is Dr. E. L. Eggleston, Battle Creek, Mich. Total registration for 1904-5 was 80; graduates, 21. The eleventh session opens Sept. 20, 1905, and closes June 19, 1906.

Illinois Medical College.—This school, organized in 1894, has a faculty of 31 professors and 20 assistants, a total of 51. A college dispensary and Cook County Hospital are available for clinical study. The requirements of admission include a high school diploma or its equivalent. The college is a member of the Association of American Medical Colleges. Attendance for seven months during each year is necessary for graduation. Total fees are about $125 for each year. The Dean is Dr. B. B. Eads, 103 State St. Total registration for 1904-5 was 192; graduates, 59. The next fall term begins Sept. 4, 1905.

Dearborn Medical College.—This school was organized in 1903, with a faculty of 38 professors and 4 assistants, a total of 42. The instruction, which is given in the evening only, extends over a period of four years of ten months each. Cook County Hospital, Samaritan Hospital and a college dispensary supply the clinical material. The total fees are: $5 matriculation fee, $110 tuition, and $10 laboratory deposit. The Dean is Dr. L. Blake Baldwin; the Secretary, Dr. J. L. Wells. Total registration for 1904-5 was

181; graduates, 29. The next session begins Sept. 4, 1905, and ends June 23, 1906.

Hahnemann Medical College.—Homeopathic. This school was organized in 1855, and has a faculty of 104. Hahnemann Hospital and a college dispensary supply clinical material. The requirements for admission are a high school diploma or its equivalent. The course is four years of seven months each. Fees: Matriculation, paid once, $5; each semester, $50, and hospital tickets, $5 each for third and fourth years. The Registrar is Dr. W. Henry Wilson. Total registration 1904-5, 220: graduates, 61. The next session begins Sept. 27, 1905.

Hering Medical College.—Homeopathic. This school was organized in 1892. Dunham Medical College, organized in 1895, was consolidated with this school in August, 1902. In January, 1905, it purchased the Chicago Homeopathic College Building at 354 South Wood St., opposite Cook County Hospital, which it now occupies. The faculty comprises 40 professors and 25 associates, lecturers, etc., in all 65. Hering College Hospital, Chicago Homeopathic, Frances Willard and Cook County hospitals supply clinical facilities. The course covers four years of eight months each. The total fees for a full course are $300 if paid in advance, or $100 per year. The Dean is Dr. H. C. Allen. Total registration for 1904-5 was 50; graduates, 14. The fourteenth session begins Sept. 4, 1905, and ends May 3, 1906.

College of Medicine and Surgery.—Physio-Medical. This school was organized in 1896, and has a faculty of 48 professors and 14 assistants. Three college dispensaries supply material for clinical work. The course covers four years of nine months each, divided into 3 semesters of three months each. Fees for the first, second and third years, $100 each, and $115 for the fourth. The Secretary is Dr. Franklyn J. Morgan, 67 Wabash Ave. Total registration for 1904-5 was 89; graduates, 14. The next session begins Sept. 25, 1905, and ends June 28, 1906.

Bennett College of Eclectic Medicine and Surgery.—This school, organized in 1868, has a faculty of 40 professors and 12 assistants, 52 in all. The Bennett, Cook County and Baptist hospitals and a college dispensary supply clinical facilities. Matriculants must present a diploma or certificate or pass a satisfactory examination "in conformity with the minimum requirements of the State Board of Health." This course covers four years of twenty-six weeks each. This school is a member of the National Confederation of Eclectic Medical Colleges. Fees for each year are $100, with a matriculation fee, paid once, of $5. The Dean is Dr. A. L. Clark, Elgin, Ill. Total registration, 1904-5 was 103; graduates, 30. The thirty-eighth session begins Sept. 26, 1905, and ends May 8, 1906.

American College of Medicine and Surgery.—This school was founded in 1901 and has a faculty of 65. The requirements for entrance are graduation from an accredited high school or equivalent. The course is four years of eight months each. Frances E. Willard and Cook County hospitals supply clinical material. The Secretary is Dr. J. N. Roe. The annual fee is $100; matriculation fee is $5; a total fee for one year, with board, room, light and heat, is $208. The enrolment, 1904-5, was 292; graduates, 34. The next session begins Sept. 26, 1905, and closes May 15, 1906.

National Medical University.—This school was organized in 1891, and its courses include instruction in the methods of all the so-called schools of practice, including manual therapeutics. The faculty numbers 66. The requirements for entrance are in accordance with the requirements of the Illinois State Board of Health. Each year is divided into four quarters of thirteen weeks each, attendance on three quarters constituting one college year. The fees are $200 per year. The Dean is Dr. L. D. Rogers, 533 Wells St. Total matriculants for 1904-5 were 232; graduates, 29. The autumn quarter will begin Oct. 1, 1905.

Jenner Medical College.—This is a day and evening school, organized in 1892. The faculty consists of 46 professors and 7 assistants, 53 in all. Cook County Hospital and college dispensary supply clinical material. The course covers four years of 40 weeks each and embraces laboratory, didactic and clinical instruction. The total fees each year are $100, with a $5 matriculation fee, paid but once. The Registrar is Dr. C. Shorman, 163 Randolph St. Total enrolment for 1904-5 was 102; graduates, 13. The next session begins Sept. 4, 1905, and will end June 29, 1906.

Harvey Medical College.—This is a night school, which was organized in 1891 and became extinct in 1905. Total registration for 1904-5 was 210; graduates, 18.

INDIANA.

Indiana, population 2,516,462, has six medical colleges. Four are situated in Indianapolis, a city of 169,164 people: The Central College of Physicians and Surgeons, Medical College of Indiana, the Eclectic Medical College and the Physio-Medical College of Indiana. The clinical facilities of Indianapolis are good, and board and lodging can be obtained from $3 a week and upward. The Fort Wayne College of Medicine is situated in Fort Wayne, a railroad and manufacturing town of 45,115 inhabitants. Board and room can be obtained there at an average of $3 a week. The School of Medicine, Indiana University is situated in Bloomington, a city of 5,000.

Indianapolis.

Central College of Physicians and Surgeons.—This school was organized in 1879 and reorganized in 1901. The faculty numbers 24 professors and 35 lecturers and demonstrators, total 59. A new college building has been erected in the center of the city on the most up-to-date plans. Its floor space comprises 25,000 square feet, more than half of which is devoted to laboratory teaching. The school gives instruction largely by laboratory and clinical methods. Clinical facilities are furnished by a dispensary maintained by the college, by the City Dispensary, City Hospital, St. Vincent's Infirmary and the Central Hospital for the Insane. Bedside clinics are given to sections of senior class daily at City Hospital. This college was a charter member of the Association of American Medical Colleges. The course is four years of seven months each. The Dean is Dr. George D. Kahlo; the Secretary, Dr. John F. Barnhill. The fees are $75 for each year. Total registration, 1904-5, was 146; graduates, 25. The session for 1905-6 will open Sept. 20, 1905, and closes April 20, 1906.

Medical College of Indiana.—This is the Medical Department of the University of Indianapolis, and was organized in 1869. The faculty embraces 25 professors, 38 adjuncts, lecturers, etc., a total of 63. The City Hospital, containing 200 beds; Indianapolis Dispensary; Central Hospital for the Insane, with a capacity for 1,800 patients; St. Vincent's and the Maternity hospitals, and a college dispensary provide clinical facilities; the wards in the charity hospitals are open to students of this college for bedside instruction. The laboratory and lecture-room space is ample. This college is a member of the Association of American Medical Colleges. The course extends over four years of seven months each. Fees, $75 for first, second and third years, and $100 for the fourth year, which includes graduation. The Dean is Dr. Henry Jameson, Newton-Claypool Bldg. Total enrolment for 1904-5 was 269; graduates, 78. The thirty-sixth session opens Sept. 14, 1905, and closes May 1, 1906.

Eclectic Medical College of Indiana.—This school was organized in 1900 and has a teaching force of 24. The course is four years of six months each. Fees: For each year, $75, or for all four, $225; $25 for graduation. Total [illegible] 44; graduates, 8. The Dean is Dr. W. M. [illegible] Ave. The Secretary is F. M. Wright, M.D., 11[illegible] The next session begins Sept. 26, 1905, and ends April 16, 1906.

Physio-Medical College of Indiana.—This school was organized in 1873, and has a faculty of 30. The course is four years of seven months each. Total fees for each year are $70. The Secretary is Dr. C. T. Bedford, Newton-Claypool Bldg. Total enrollment, 1904-5 was 72; graduates, 5. The next session begins Sept. 13, 1905, and closes April 13, 1906.

Fort Wayne.

Fort Wayne College of Medicine.—This school is the Medical Department of the Ohio Northern University, located at Ada, and was organized in 1879. It has a faculty of 27 professors and 9 lecturers and assistants, a total of 36. St. Joseph's Hospital, with a capacity of 250 patients; Hope Hospital, with 200 beds; St. Roche's Hospital, having accommodation for 35 patients; Indiana School for Feeble-Minded Youth and Allen County Orphan Asylum, capable of holding 150 children, supply the clinical facilities. This school is a member of the Association of American Medical Colleges. The curriculum covers four years of seven months each. The course is practical, supplemented by lectures and laboratory work. The total fees for each year are $75, with an additional $5 matriculation fee, payable once. The Dean is Dr. C. B. Stemen, 715 Broadway. Total registration, 1904-5, was 43; graduates, 6. The next session opens Sept. 12, 1905, and closes April 18, 1906.

Bloomington.

Indiana University School of Medicine.—This school was organized in 1903, and gives only the first two years of the medical course, extending over nine months in each year. The school is a member of the Association of American Medical Colleges. The faculty consists of 8 professors and 3 assistants, a total of 11. Dr. Burton D. Myers is the Acting Dean. The enrolment in 1904-5 was 14. The next session begins Sept. 18, 1905, and ends June 22, 1906.

IOWA.

Iowa, population, 2,231,853, has five medical colleges. The College of Medicine of the State University of Iowa and the College of Homeopathic Medicine of the State University of Iowa are located in Iowa City (population 10,000). In Des Moines (population 62,139) is the College of Medicine of Drake University. In Sioux City (population 33,111) is the Sioux City College of Medicine. In Keokuk (population 15,641) is Keokuk Medical College, College of Physicians and Surgeons. Board and lodging may be had in Des Moines for $15 a month and upward and in the other cities named for from $2.50 to $5 per week.

Des Moines.

Drake University College of Medicine.—This school was organized in 1882 under the name of the Iowa College of Physicians and Surgeons. In 1900 it became affiliated with Drake University. The faculty consists of 21 professors and 25 assistants, a total of 46. The Mercy and Methodist hospitals and a large dispensary clinic furnish clinical material. The college is a member of the Association of American Medical Colleges. The requirements for admission, after the 1st of July, 1905, will be a full four years' high school course or its equivalent. The work covers a graded course of four years of nine months each. The total fees for the first two years are $107 each, including laboratory and dissecting material; for the last two years, $89 each, including hospital fees. The Dean is Dr. D. S. Fairchild. The total registration for 1904-5 was 60; graduates, 12. The next session begins Sept. 18, 1905, and ends June 14, 1906.

Iowa City.

College of Medicine of the State University of Iowa.—This department was organized in 1870. The faculty is made up of 15 professors, 34 lecturers, demonstrators and assistants, a total of 49. The University Hospital, built in 1897, at a cost of $50,000, supplies the clinical material. The school is a member of the Association [illegible] Medical Colleges. The course of study covers f[illegible] weeks each, embracing graded laboratory, [illegible] ork. New laboratories have been erected. histology, embryology, anatomy, physiology, pharmacology, pathology, bacteriology and clinical medicine. Combined courses leading to more than one degree are offered. Total fees for each year are $50. The Dean is Dr. James R. Guthrie, Dubuque; Secretary, Dr.

W. L. Bierring, Iowa City. Total number of students registered for 1904 5 was 277; graduates, 65. The thirty-sixth session opens Sept. 21, 1905, and ends *June 13, 1906.*

College of Homeopathic Medicine of the State University of Iowa.—This was organized in 1877. The faculty is composed of 12 professors and 12 lecturers and assistants, a total of 24, but some of these are of the faculty of the College of Medicine. The requirements for admission, and the work, with the exception of that pertaining to homeopathy, are the same as those for the other department. The fees are *also the same.* The Dean is Dr. George Royal, Des Moines. Total registration for 1904-5 was 41; graduates, 9. The twenty-ninth session begins Sept. 21, 1905, and will end June.13, 1906.

Keokuk.

Keokuk Medical College, College of Physicians and Surgeons.—In 1849 the College of Physicians and Surgeons, Keokuk, was organized, and four years later it became the Medical Department of the University of Iowa, continuing as such until 1870, when the original name was resumed. By the union, in 1899, of this college with the Keokuk Medical College, organized in 1890, the present school under the above name was founded. The clinical material is good. St. Joseph's Hospital is open to the student for study and the clinics held there are large and varied. The faculty is composed of 17 professors *and* 3 assistants and demonstrators, 20 in all. This college is a member of the Association of American Medical Colleges. The studies embrace a graded course of four years of seven months each. The total fees for the first year are $63; for the second and third, $58 each, and $53 for the last year. *The Secretary* is Dr. *C. E. Ruth. Total registration for* 1904-5 was 230; graduates, 50. The next session begins Sept. 19, *1905, and ends April 24, 1906.*

Sioux City.

Sioux City College of Medicine.—This school was organized in 1891. The faculty numbers 26. Clinical material is supplied by St. Joseph's, Mercy and Samaritan Hospitals and a college dispensary. This college is a member of the Association of American Medical Colleges. The system *of study* embraces a four-year graded course, eight months being a school year. Final examinations are held at *the close of each course* of instruction. Matriculation fee, paid but once, $5; tuition, each year, $48; hospital fee, $5, and graduating fee, $20. The *President* is Dr. J. N. Warren. *Total* number of students registered, 1904-5, was 72; graduates, 14. The sixteenth session opens Sept. 13, 1905, and will close May 2, 1906.

KANSAS.

Kansas, population, 1,600,000, has two medical colleges: Kansas Medical College is in Topeka (population 33,608), and the College of Physicians and Surgeons, now a part of the University of Kansas, in Kansas City (population 55,000). In addition there is a school which does not grant degrees, but prepares students in the first two years. This is the Medical School of the University of Kansas, at Lawrence, a town of 10,862 people. Board and lodging in all these places *may be had for $3 to $5 per week.*

Lawrence.

University of Kansas School of Medicine.—This school was organized in 1880. The faculty numbers 18. This school is a member of [illegible] nerican Medical Colleges. Only the purely [illegible] taught in Lawrence, but the work in these is [illegible] weeks being devoted to the two-year course. The greater part of the work is done in the laboratory, with recitations and assigned readings, the lectures being supplementary only. For this reason the equipment and arrangement of the laboratories have been given special attention. A combined course of four years is offered, conferring "the degree of bachelor of arts in medicine." In the year 1905-6 the work will be entirely reorganized. The *third and fourth years'* work will be *added,* but will not be given at Lawrence. A hospital will be erected at Rosedale, Kan., a suburb of Kansas City, and the clinical work will be carried on at this place. The total fees to residents of the state are: First year, $25; second, $25; to non-residents of the state, $35 and statement as to change in fees for next year. The Acting Dean is Dr. Geo. E. Hoxie. The number of students registered for 1904-5 was 32. The next session begins Sept. 6, 1905, and will end June 6, 1906.

Kansas City.

College of Physicians and Surgeons.—This was organized in 1894 as the Medical Department of Kansas City University, and in 1905 was absorbed by the Medical Department of the University of Kansas. The total registration in 1904-5 was 55; graduates, 3.

Topeka.

Kansas Medical College, Medical Department of Washburn College.—This college, organized in 1890, has a faculty of 25 professors and 8 lecturers and assistants, 33 in all. Good material for both medical and surgical clinics is found in Christ's Hospital, with 100 beds, and Topeka State Hospital; the dispensary in the college building also supplies material for class demonstration. The college is a member of the Association of American Medical Colleges. The college building affords ample laboratory and lecture-room space. The course of study is a graded one, covering four years of 30 weeks each. Individual instruction is especially aimed at. The total fees for the first three years are $70 each, and $30 for the last year. The Dean is Dr. William S. Lindsay; Secretary, Dr. William McVey. The *total* registration for 1904-5 was 91; graduates, 18. The sixteenth session begins Sept. 13, 1905, and will close April 18, 1906.

KENTUCKY.

Kentucky, population 2,147,174, has seven medical colleges. *They are all situated in Louisville, a city of about 225,000* inhabitants, and are as follows: University of Louisville Medical Department, Kentucky School of Medicine, Louisville Medical College, Hospital College of Medicine, Southwestern Homeopathic Medical College, Kentucky University Medical Department, and the Louisville National Medical College. Board and lodging in Louisville costs from $3 to $4 per week.

Louisville.

Kentucky School of Medicine.—This school was organized in 1850, and has a faculty composed of 20 professors, 27 lecturers, instructors and assistants, a total of 47. It is a lineal descendant of the Medical Department of [illegible] situated at Lexington, Ky. The [illegible] and the college dispensary furnis[illegible] udy. [illegible] direc[illegible] tient [illegible] beds [illegible] asses [illegible] ge is a [illegible] mer- [illegible] The l[illegible] are [illegible] mbraces a four years' course of [illegible] weeks [illegible] first three years are $75 each; for the [illegible] Dean is Dr. W. H. Wathen, 628½ Fourth Ave. Total number of students *registered for* 1904-5 was 193; graduates, 49. The next session begins Dec. 15, 1905, and will end July 12, 1905.

Louisville Medical College.—This school was organized in 1869 and has a faculty of 12 professors and 18 instructors and assistants, 30 in all. The City Hospital, College Infirmary and a dispensary offer good clinical facilities. Applicants for admission must show by dipl[illegible] mination *that they are sufficiently* proficient [illegible] algebra, physics and such Latin as would be [illegible] study. The laboratories and lecture rooms a[illegible] of study covers four years of six months each. The fees are $75 each year, with graduating fee of $25. The Secretary is Dr. Irvin Abell. Total registration for 1904-5 was 263; graduates 40. The next session opens Dec. 11, 1905, and closes July 1, 1906.

Hospital College of Medicine.—This school is the medical department of Central University of Kentucky and was organized in 1873. The faculty is composed of 16 professors and 35 assistants, lecturers, etc., a total of 51. The Gray Street Infirmary, City Hospital and a well-equipped college dispensary present good facilities *for clinical study. This college is a member of the Association of American* Medical Colleges. Laboratory work, which is a prominent feature of the course, is thorough and practical. The laboratories and amphitheaters are ample in equipment and capacity, and the hospital advantages give opportunity for personal bedside instruction. The course covers four years of seven months each. Total fees for each of first three years, $75, and $100 for the fourth year. The Dean is Dr. P. Richard Taylor. Total enrolment for 1904-5 was 423; graduates, 90. The thirty-second session opens Dec. 1, 1905, and closes July 1, 1906.

Kentucky University Medical Department.—This school was reorganized in 1898. The faculty is composed of 17 professors and 25 lecturers, demonstrators, etc., 42 in all. Broadway Infirmary, the City Hospital and the college dispensary furnish clinical material. The school is a member of the Association of American Medical Colleges. The buildings provide ample facilities for clinical, laboratory and didactic instruction. The course of study embraces graded work for four years of thirty weeks each. Tuition is $75 per session and $25 graduation fees. The Dean is Dr. Thomas C. Evans, 419 West Chestnut St. Total number of students registered in 1904-5 was 340; graduates, 76. The next session begins Jan. 1, 1906, and continues seven months.

University of Louisville Medical Department.—This school was organized in 1837, under the name, Louisville Medical Institute, and in 1846 assumed its present title. It has a faculty of 11 professors and 27 lecturers, demonstrators, etc., a total of 38. The University Hospital, City Hospital, Sts. Mary and Elizabeth Hospital, together with the college dispensary, furnish good clinical material. The course covers graded work *for four years of* seven months each. Total fees: First year, $107; second, $122; third, *$100, and fourth; $112. The Dean is Dr. J. M. Bodine.* Total registration for 1904-5 was 248; graduates, 75. The sixty-eighth session begins Oct. 2, 1905, and ends May 1, 1906.

Louisville National Medical College.—Colored. This was chartered in 1888 and shows a teaching force of 25. There is a four-year course, seven months to the year; the fees are $58, $58, $55 and $50 for the four years respectively. The Dean is Dr. E. S. Porter, *Tenth and Walnut. The attendance* 1904-5 was 37; graduates, 6. The next session opens Oct. 7, 1905, and ends May 17, 1906.

Southwestern Homeopathic Medical College.—This college was organized in 1892, and has a faculty of 17 professors and 10 *lecturers and assistants,* 27 in all. A college dispensary supplies clinical material. The curriculum covers four years of seven months each. Total fees*: First and second years, $80*; third, $70, and $65 for the fourth. The Dean is Dr. A. L. *Monroe.* Total number of students for 1904-5 was 19; graduates, 6. Next session opens Sept. 26, 1905, and closes April 24, 1906.

LOUISIANA.

Louisiana, having a *population* of 1,381,625, contains two medical colleges: Medical Department of the Tulane University of Louisiana and New Orleans University. They are both situated in New Orleans, a city of 287,104 people. The cost of room and board is from $16 to $22 a month.

New Orleans.

Flint Medical College of New Orleans University.—Colored. This school was organized in 1889. The faculty is made up of 7 professors, 4 lecturers and instructors, 11 in all. Clinical material is supplied by the Sarah Goodridge Hospital and by an outdoor clinic. This college is a member of the Association *of American Medical Colleges.* The curriculum covers a graded course of four years, thirty weeks each. The laboratories and lecture rooms are ample. Examinations are held monthly. Total fees for the first, second and third year are $40 each, and $50 for the last year. The President is Dr. F. H. Knight, New Orleans. Total enrolment for 1904-5 was 55; graduates, 7. The sixteenth college year begins Sept. 26, 1905, and will end March 17, 1906.

Medical Department of the Tulane University of Louisiana.—This school was organized in 1834 as the Medical College of Louisiana, and became, by law, in 1847, the Medical Department of the University of Louisiana, and in 1884 the Medical Department of the Tulane University of Louisiana. The faculty and all other instructors number 49. By acts of legislature the Charity Hospital, with its 900 beds, has been opened to the students of this school, *for clinical study, not only in medicine and surgery, but also in* obstetrics and gynecology. In the year 1903 there were 8,813 cases treated in the wards of this hospital; these were indoor patients, and, in addition, 19,302 outdoor patients were treated in the free dispensary department. The Milliken M[illegible] a capacity for 200 children, is also availab[illegible] cases. Bedside instruction is given by the [illegible] these hospitals, and postmortem examinations are held before the students. The laboratories are large and well equipped, and the lecture rooms and recitation rooms are ample. The course of study covers four terms of twenty-eight weeks each. Total fees for the first two years are $135 each, and for the third and fourth, $145 and $170, respectively. The Dean is Dr. Stanford E. Chaille, New Orleans. The total number of medical students registered for 1904-5 was 469; graduates, 83. The seventy-second session begins Oct. 19, 1905, and will close May 2, 1906.

MAINE.

Maine, population 694,466, has one medical college, located in Portland, population 60,000. Board and lodging cost from $3 to $5 a week.

Portland.

Medical School of Maine.—This, the Medical Department of Bowdoin College, was organized in 1820. It has 15 professors and 18 instructors, total 33. Students of the first and second years are instructed in Brunswick, a town of 6,800 inhabitants. The third and fourth year classes are taught in Portland, where are situated the Maine General Hospital and other clinical advantages. Applicants for admission, unless they possess a diploma, are examined in English, arithmetic, algebra, geometry, United States history, physics, chemistry and Latin. The course covers four years of eight months each. The total fees are $120 for the first year for the second and third, $110, and $110 for the fourth year. The Dean is Dr. Alfred Mitchell, Brunswick. Total number of students in 1904-5 was 93; graduates, 18. The next session opens Oct. 19, 1905, and closes June 20, 1906.

MARYLAND.

Maryland, with a population of 1,188,044, contains eight medical colleges, all located in Baltimore, a city with 508,957 inhabitants. They are as follows: School of Medicine of the University of Maryland, College of Physicians and Surgeons, Baltimore University School of Medicine, Baltimore Medical College, Women's Medical College, Southern Homeopathic Medical College, Johns Hopkins Medical School and Maryland Medical College. The Bay View Hospital, having a capacity for 2,000 patients, is open to students for clinical instruction, and furnishes good opportunities for practical demonstrations. Board and lodging can be obtained for from $3 to $5 per week.

Baltimore.

Johns Hopkins Medical School.—This is the Medical Department of Johns Hopkins University, and was organized in 1893. The faculty comprises 11 professors, 71 lecturers, clinical professors, associate professors, associates, instructors and assistants, a total of 82. The Johns Hopkins Hospital and Dispensary furnishes abundant and varied clinical material; the lying-in department of the hospital, opened in 1896, is in successful operation. The requirements for admission demand that the applicant either has, (*a*) completed the chemical-biologic course which leads to the A.B. degree in the university; (*b*) graduated at an approved college or scientific school, and can furnish evidence of an acquaintance with Latin and a fair reading knowledge of French and German, and a knowledge of physics, chemistry and biology, such as may be obtained from a year's course, including laboratory instruction. The school is a member of the Association of American Medical Colleges. The laboratories are large, well lighted and well equipped. The buildings are ample and built expressly for the purpose for which they are used. In the method of instruction special emphasis is laid on practical work in the laboratories, dispensary and wards of the hospital. The first two years are devoted mainly to practical work in the laboratories, combined with demonstrations, recitations and lectures, and during the remainder of the course opportunity for the personal study of cases is given. The work covers a graded course of four years, eight and a half months to the year. Final examinations, partly written and partly oral, include practical tests in laboratory and clinical work; the general character of the student's work is closely watched. The charge for tuition is $200 per annum, with no fees unless a microscope is rented; that fee is $5 a year. The Dean is Dr. William H. Howell, 232 W. Lanvale St. Total registration in 1904-5 was 291; graduates, 55. The next session begins Oct. 3, 1905, and ends June 2, 1906.

University of Maryland School of Medicine.—This institution was organized in 1807 as the College of Medicine of Maryland, and in 1812, other faculties having been added, the whole was chartered under the name of the University of Maryland. The faculty is composed of 14 professors, 46 associates and lecturers, etc., a total of 60. The University Hospital, a part of which is used for a hospital for foreign seamen and another portion for a free city hospital, offers excellent clinical facilities. Beside this, the Presbyterian Eye, Ear and Throat Charity Hospital, in which 11,317 patients were treated in 1902; the Hospital for the Relief of Crippled and Deformed Children, containing 40 beds; the Maternity Hospital, and a college dispensary furnish material for clinical study. This school is a member of the Association of American Medical Colleges. The laboratories and lecture rooms are ample and well equipped. An entirely new laboratory building has just been erected. The fourth-year class, divided into sections, receives special training in practical laboratory work in a well-appointed clinical laboratory. Didactic, laboratory and clinical instruction, special attention being paid to bedside work, make up the system of teaching. The course covers four years of eight months each, and is graded. The total fees for the first two years are $135 each; for the third year, $125, and $155 for the final year. The Dean is Dr. R. Dorsey Coale, Baltimore. The total number of students registered in 1904-5 was 340; graduates, 100. The ninety-ninth session begins Oct. 2, 1905, and will terminate June 1, 1906.

Baltimore Medical College.—This college was organized in 1881, and has a faculty of 59. The clinical material is furnished by the Maryland General Hospital, having a capacity of 200 beds; the Maryland Lying-in Hospital; the Mount Hope Retreat, which presents good opportunity for the study of nervous and mental diseases, and a college dispensary, which, beside the great number of ambulatory patients treated, has an outdoor department that permits of the advanced student taking care of charity cases and carrying out his own treatment. This college belongs to the Association of American Medical Colleges. The college buildings afford ample laboratory, clinical and lecture room space. Bedside teaching in the hospital wards is carried on in sections, and every member of the senior class is required to attend throughout the session. The course of study is graded and covers four years of eight months each. The Dean is Dr. David Streett. The total number of students registered in 1904-5 was 406; graduates, 96. The twenty-fifth session opens Sept. 20, 1905, and closes May 20, 1906.

College of Physicians and Surgeons.—This school was organized in 1872, and in 1878 Washington University School of Medicine, established in 1827, was consolidated with it. The faculty numbers 53. The clinical facilities, beside those afforded in common with other schools, are supplied by the Baltimore City Hospital, the Hospital for the Colored Race, containing 100 beds; *the Nursery and Child's Hospital, with 150 beds; the Maryland* Lying-in Asylum and a college dispensary. This school is a member of the Association of American Medical Colleges. The work covers a graded course of four years, eight months constituting a year. Total fees are $115, $115, $115 and $135 for the respective years. The Dean is Dr. Charles F. Brown. The total number of students registered in 1904-5 was 298; graduates, 70. The next session opens Oct. 1, 1905, and closes June 1, 1906.

Maryland Medical College.—This school was organized in 1898 and has a faculty of 19 professors, 25 associates, lecturers, etc., 44 in all. The Franklin Square Hospital, West End Maternite and a college dispensary furnish clinical material. The course of study covers four years of eight months each. A matriculation fee of $5 and total laboratory fees for the four years of $55 are charged; tuition is $75 each year. The Dean is Dr. J. B. Schwatka, 1003 North Broadway. Total registration for 1904-5 was 207; graduates, 93. The eighth session begins Sept. 15, 1905, and closes in May, 1906.

Woman's Medical College.—This school was organized in 1882 and has a faculty of 17 professors, 18 associates, assistants and lecturers, a total of 35. The Hospital of the Woman's Medical College and a college dispensary furnish general clinical material, while abundant special material is furnished by the Presbyterian, Eye and Ear and the Sheppard and Enoch Pratt Hospital (for mental cases). The college is a member of the Association of American Medical Colleges. The laboratories and lecture rooms are equipped with all necessary apparatus; the practical work is emphasized. Eight months constitute a school year and the course covers graded work for four years. The total fees for the first three years are $106 each, and $81 for the last year, with $30 graduation fee. The Dean is Dr. S. Griffith Davis, 1220 Sight St. Total number registered for 1904-5 was 36; graduates, 3. The twenty-fourth session opens Oct. 1, 1905, and closes May 31, 1906.

Southern Homeopathic Medical College.—This school was organized in 1890, and has a faculty of 10 professors, 14 associates and lecturers, a total of 24. The clinical facilities are those offered by [illegible] Hospital, which has 55 beds, and the [illegible] also furnishes clinical material. [illegible] must pass a satisfactory examinat[illegible]phy, history and Latin, unless t[illegible] evidence that they have done a corresponding amount of work. The course covers graded work for four years, seven months to the year. The fees are $105 for the first year, $100 each for the second and third, and $130 for the last year; $350 in advance for the full four years' course, with a reduction in the fees for the fourth year to those whose averages exceed 90 per cent. in previous years. The Dean is Dr. George T. Shower, 421 Roland Ave. Total registration for 1904-5 was 33; graduates, 9. The fifteenth session begins Oct. 3, 1905, and ends May 1, 1906. 1. 1906.

Baltimore University School of Medicine.—This school, organized in 1884, has a faculty of 10 professors and 25 lecturers, demonstrators, etc., in all 35. The Baltimore University Hospital, Lying-in Hospital and the clinical material used in common with the other schools supply the facilities for practical work. The course is four years of six months each. The fees are about $100 each year. The Dean is Dr. Hampson H. Biedler, 119 W. Saratoga St. Total registration for 1904-5 was 79; graduates, 14. The next session opens Oct. 1, 1905, and closes April 1, 1906.

MASSACHUSETTS.

Massachusetts, population 2,805.340, has four medical colleges: Medical School for Harvard University, Boston University School of Medicine, College of Physicians and Surgeons, and Tufts College Medical School. They are all situated in Boston, a city of 603,163 inhabitants. Board and lodging can be obtained from $5 to $7 per week.

Boston.

Medical School of Harvard University.—This was organized in 1782, and has a faculty of 32 professors, 113 associates and assistants, etc., a total of 145. Beside the clinical advantages mentioned, the Boston Lying-in Hospital, the Boston Dispensary, where 43,918 patients were treated last year; the Infants' Hospital, the Children's Hospital, Long Island Hospital, containing 250 beds, and the Marine Hospital, all furnish excellent opportunity to the student for clinical study. Students are also permitted to visit the Free Hospital for Women and Carney Hospital on application to the physicians on duty. Candidates for admission "must present a degree in arts, literature, philosophy or science from a recognized college or scientific school, with the exception of such persons, of suitable age and attainments, as may be admitted by special vote of the faculty in each case. Each candidate is required to hand in the original note book in which he recorded the work performed by him in qualitative analysis, and also to pass a written examination in theoretical and descriptive chemistry. If conditioned in chemistry one year is allowed in which to remove the condition. The laboratories and lecture rooms offer ample facilities, and the equipment is good; special facilities are open to those desiring to pursue advanced or original work. The course of study covers four years of nine months each; the course is graded, and each correlated group as taken up presents sufficient variety to avoid monotony. A series of written, oral and practical examinations are distributed throughout the course of study. Fees: Matriculation, $5; $200 each year. The Dean is Dr. William L. Richardson, 688 Boylston St. The total registration for 1904-5 was 307; graduates, 67. The 124th session begins Sept. 28, 1905, and ends June 28, 1906.

TUFTS COLLEGE MEDICAL SCHOOL.—This school was organized in 1893 as the Medical Department of Tufts College. It has a faculty of 33 professors, 55 assistants and lecturers, etc., a total of 88. Clinical material is furnished by the Boston City Hospital, Massachusetts Charitable Eye and Ear Infirmary, Free Home for Consumptives, Free Hospital for Women; Boston Dispensary, Cambridge Hospital, St. Elizabeth's Hospital, Carney Hospital and the college dispensary; the student has also [illegible] from an out-department in connection with [illegible] "Graduates of a high school, college or [illegible] having certificates of entrance to a college or university, or holding the State of New York [illegible] so certain approved preparatory school grad[illegible]thout examination; all others must pass an [illegible] Latin, physics and mathematics, including e[illegible] plane geometry. The laboratories and lecture [illegible] heir equipment and capacity. Teaching is carried on by means of lectures, recitations and practical work in the laboratories and clinics; frequent examinations are held during a course, and final examination on completing the subject. Graded instruction covering four years of eight months each makes up the full course. The total fees are $150 each year; dissecting material is furnished at cost. The Dean is Dr. Harold Williams. Total number of students for 1904-5 was 385; graduates, 62. The twelfth session begins Sept. 27, 1905, and ends May 30, 1906.

COLLEGE OF PHYSICIANS AND SURGEONS.—This school was organized in 1880, and has a faculty of 25 professors and 14 lecturers and assistants, a total of 39. Clinical facilities are furnished by the North End Dispensary Hospital, Union General Hospital, and the city and state institutions. This school is a member of the Association of American Medical Colleges. The course of study covers graded work for four years of nine months each. The total fees for the first year are $100, and for each of the other years about $110, with a graduation fee of $30. The Registrar is Dr. John H. Jackson, 155 Franklin St., Fall River. Total students registered, 1904-5, 168; graduates, 28. The twenty-sixth session begins Sept. 19, 1905, and ends June 18, 1906.

BOSTON UNIVERSITY SCHOOL OF MEDICINE.—Homeopathic. This school was organized in 1873; in 1874 the New England Female Medical College, founded in 1848, was merged into it. The faculty includes 20 professors, 39 associates and assistants, etc., a total of 59. Clinical material is furnished by the Massachusetts Homeopathic Hospital, containing 235 beds, a dispensary, a maternity hospital, and the Westborough Insane Hospital, 800 patients. Candidates who have taken their degree in arts, philosophy or science are not examined; certificates of graduation from approved high and preparatory schools accepted in lieu of entrance examinations; all others are examined in English, Latin, French or German, or history, mathematics, physics and chemistry. The instruction is graded and covers a period of four years, eight months each. Total fees for the first year are $105; for the second and third, $125 each, and for the last year, $155. The Dean is Dr. John P. Sutherland, 295 Commonwealth Ave. Total registration for 1904-5 was 93; graduates, 14. The thirty-third session opens Oct. 5, 1905, and closes June 6, 1906.

MICHIGAN.

Michigan, population 2,420,982, has six medical colleges. Two of these, University of Michigan, Department of Medicine and Surgery and the Homeopathic College of the University of Michigan, are located at Ann Arbor, a city of about 16,000 people. Board and lodging cost from $2.50 to $5 a week. Detroit, a city of 300,000 inhabitants, contains three medical colleges, as follows: Detroit College of Medicine, Detroit Homeopathic College and the Michigan College of Medicine and Surgery. Board and room can be obtained for $3 a week and upward. Grand Rapids Medical College is located in Grand Rapids, population 87,565. Room and board cost from $3 to $3.50 a week.

Ann Arbor.

UNIVERSITY OF MICHIGAN, DEPARTMENT OF MEDICINE AND SURGERY.—This was organized in 1850, and has a faculty composed of 18 professors, 35 associates, instructors, etc., a total of 53. The University Hospital, with nearly 200 beds, furnishes the clinical facilities. The requirements for admission provide that the applicant, either by certificate or examination, show a sufficient knowledge of the following: English grammar, rhetoric and composition; United States and general history; algebra, through quadratics, plane and solid geometry and plane trigonometry; physics, biology and chemistry, these subjects to be accompanied by laboratory work; German or French and Latin. The laboratories and their equipment are good, and the training in them and in didactic work is thorough. The new medical building accommodating the laboratories of hygiene, bacteriology, physiologic chemistry, pathology, histology, embryology and anatomy is now completed and occupied. This school is a member of the Association of American Medical Colleges. The curriculum embraces four years of nine months each. A combined course leading to degrees in both arts and medicine in six years is offered. The total fees for Michigan students for the entire course of four years is about $300, and for others $350. The Dean is Dr. Victor C. Vaughan. Total registration for 1904-5 was 376; graduates, 61. Next session begins Sept. 26, 1905, and will end June 21, 1906.

HOMEOPATHIC COLLEGE, UNIVERSITY OF MICHIGAN.—This department of the University was organized in 1875, and has a faculty of 29 professors and 20 assistants, total 49; a part of the teaching force is from the other departments of the University. The Homeopathic Hospital, containing 140 beds, furnishes material for clinical teaching. The course covers four years of nine months each. The total fees for Michigan students are about $240 for the four years, and for other students about $295. The Dean is Dr. W. B. Hinsdale. The enrolment for 1904-5 was 66; graduates, 12. The next session begins Sept. 26, 1905, and closes June 21, 1906.

Detroit.

DETROIT COLLEGE OF MEDICINE.—This school was formed in 1885 by the union of Detroit Medical College organized in 1868, and the Michigan College of Medicine, established 1880. The faculty embraces 21 professors, 71 lecturers, instructors, etc., a total of 92. Clinical facilities are offered by the following hospitals: St. Mary's and Harper, each of which contain a free dispensary; Woman's, St. Luke's, the Children's Free Hospital and the House of Providence. This school is a member of the Association of American Medical Colleges. The course covers four years of seven months each. The work includes laboratory, didactic and clinical study. Fees: Matriculation, paid once, $5; tuition, each term, $65; hospital and laboratory tickets, each $10, and diploma fee, $30. The Secretary is Dr. H. O. Walker. Total enrolment for 1904-5 was 208; graduates, 54. The next session begins Sept. 20, 1905, and will close May 3, 1906.

MICHIGAN COLLEGE OF MEDICINE AND SURGERY—SAGINAW VALLEY MEDICAL COLLEGE.—These two schools, organized in 1888 and 1896, respectively, were consolidated last year, to continue on the site of the former. The faculty numbers 57. Clinical facilities are offered by a college dispensary, the Emergency Hospital and Detroit Eye and Ear Infirmary. This school is a member of the Association of American Medical Colleges. The course covers graded work for four years of eight months each. The fees are about $80 to $95 per year; third year, $70, and $95 for the fourth year. The Dean is Dr. Hal. C. Wyman, 46 W. Adams Ave., Detroit. Total registration for 1904-5 was 78; graduates, 26. The next session begins Sept. 19, 1905, and will end May 8, 1906.

DETROIT HOMEOPATHIC COLLEGE.—This was organized in 1899, and has a faculty of 37. Grace Hospital and a college dispensary are available for study of clinical cases. Unless possessing at least a high school diploma applicants for admission will be examined by the state board. The course embraces work for four years of eight months each. Fees: From $70 to $90 per year. The Dean is Dr. D. A. MacLachlan; Registrar, J. M. Griffin. Total enrolment for 1904-5 was 44; graduates, 12. The next session begins September, 1905, and will close May, 1906.

Grand Rapids.

GRAND RAPIDS MEDICAL COLLEGE.—This was organized in 1897. The faculty is made up of 27 professors and 6 assistants, in all 33. Clinical cases in the U. B. A., St. Mary's and Woman's Butterworth hospitals and St. John's Orphan Asylum and a college dispensary are available for study. The course is four years of seven months each. The total fees are about $65 for each year. The Dean is Dr. G. L. McBride, 141 E. Bridge St. Next session opens Sept. 27, 1905, and closes May 1, 1906.

MINNESOTA.

Minnesota, population 1,751,394, contains three medical colleges: Hamline University College of Medicine, and the two medical departments of the University of Minnesota, viz., the College of Medicine and Surgery and the College of Homeopathic Medicine and Surgery. They are all situated in Minneapolis, a city with a population of 225,000. The various hospitals of Minneapolis furnish ample clinical material, and owing to the proximity to St. Paul the clinical advantages of that city are available. The average cost of board and lodging is $20 a month.

Minneapolis.

COLLEGE OF MEDICINE AND SURGERY, UNIVERSITY OF MINNESOTA.—This department of the University of Minnesota was created in 1883, but at that time its only function was to examine for the degrees of B.M. or M.D. In 1888, by the consolidation and absorption of the Minnesota Hospital Medical College and the St. Paul Medical College, its present status was assumed. The faculty is composed of 30 professors and 75 [illegible] assistants, a total of 105. The medical school [illegible] and its laboratories are excellent. Eight [illegible] Twin Cities, beside the University Dispensary and St. Paul dispensary, afford an abundant supply of material for clinical study. The curriculum covers four years of nine months each, and the work is carefully graded. The entrance requirement of one year of university, in addition to four years of high school work, limits the number of students, but assures a high standard of the student body. This school is a member of the Association of American Medical Colleges. Total number of students registered in 1904-5 was 227; graduates, 75. Total fees for each year, $100. The Dean is Dr. Parks Ritchie. The next session opens Sept. 1, 1905, and closes June 1, 1906.

COLLEGE OF HOMEOPATHIC MEDICINE AND SURGERY.—This is a department of the University of Minnesota and was organized in 1888. The faculty comprises 19 professors and 14 assistants, 33 in all. Instruction in the primary branches is received, in common with the students of the College of Medicine and Surgery from the professor of the department of medicine. The course is graded, extending over four years of nine months each. The total fees for the first two years are $100 each and $80 each for the last two years. The Dean is Dr. Eugene L. Mann. Total number of students registered in 1904-5 was 16; graduates, 4. The next session opens Sept. 1, 1905, and closes June 1, 1906.

HAMLINE UNIVERSITY COLLEGE OF MEDICINE.—This was organized in 1883. Its faculty is composed of 29 professors, 16 instructors and assistants, a total of 45. The laboratories and lecture rooms are large, well lighted and supplied with all the necessary [illegible] is offered to the student in City Hospital, [illegible] d, Swedish, St. Barnabas' and St. Mary's [illegible] Luther Hospital, City and County, and [illegible] and the college dispensary. This school belongs to the Association of American Medical Colleges. The course of study covers graded work for four years, eight and a half months making a year. Total fees, first year, $90; second year, $87.50, and for each of the last two, $80. The Dean is Dr. George C. Barton. Total number of students, 1904-5, was 123; graduates, 10. The next session begins Sept. 19, 1905, and ends June 6, 1906.

MISSISSIPPI.

Mississippi, population 1,551,270, has one medical college, the Medical Department of the University of Mississippi, located at Oxford, a city with 2,000 inhabitants.

Oxford.

UNIVERSITY OF MISSISSIPPI MEDICAL DEPARTMENT.—This school was organized two years ago, with 7 professors and 5 assistants, a total of 12. Each college term extends over nine months. The school is a member of the Association of American Medical Colleges. Dr. W. S. Leathers is the Acting Dean. The total registration in 1904-5 was 18; graduates, none. The next session begins Sept. 21, 1905, and ends June 7, 1906.

MISSOURI.

Missouri, population 3,106,665, has eleven medical colleges. St. Louis, population 575,238, contains six of these, viz.: St. Louis College of Physicians and Surgeons, American Medical College, Homeopathic Medical College of Missouri, Medical Department St. Louis University, (Marion-Sims-Beaumont College of Medicine), Washington University Medical Department, and Barnes Medical College. Board and lodging can be procured for from $3.50 to $5 a week. Kansas City, with 163,752 inhabitants, has six colleges, namely: Kansas City Medical College, University Medical College, the Hahnemann Medical College of Kansas City, Medico-Chirurgical College and Eclectic Medical University. Room and board can be obtained in this city for from $3 to $5 a week. Ensworth Medical College and Central Medical College are located in St. Joseph, population 105,000; board and room can be had for from $3.50 to $5 a week. Department of Medicine of the University of Missouri is at Columbia, a town of 5,651. Board and lodging can be obtained at Columbia for from $2 to $5 a week. (Since writing the above, the Kansas City Medical College and the Medico-Chirurgical college have been absorbed by the University of Kansas, and the Ensworth and Central Medical colleges have united.)

Columbia.

DEPARTMENT OF MEDICINE OF THE UNIVERSITY OF MISSOURI.—This department was organized at Columbia in 1872. The faculty includes 11 professors, 19 assistant professors, lecturers, etc., a total of 30. Clinical facilities are supplied by the Parker Memorial State Hospital. A new $40,000 building for the medical laboratories has recently been completed and [illegible] nt. Special emphasis is laid on thorough trai[illegible] ranches which constitute the foundation of [illegible] course nine months each, carefully graded. The university offers also a combined course of six years, conferring degrees in both arts and medicine. The entrance requirements are a diploma from a good high school, or the full equivalent. This school is a member of the Association of American Medical Colleges. There is no charge for tuition, the only expenses being a library fee of $10 each year, and small laboratory fees. The Dean is Dr. A. W. McAlester. Total registration of students for 1904-5 was 108; graduates, 8. The next session opens Sept. 12, 1905, and closes June 6, 1906.

Kansas City.

UNIVERSITY MEDICAL COLLEGE.—This was organized in 1881 as the University of Kansas City Medical Department, and in 1888 was reorganized under its present name. Its faculty comprises 37 professors and 48 lecturers and assistants, a total or 85. *Clinical* material is furnished by the University Hospital, owned by the college, with 100 beds; the City Hospital, German Hospital, Home for the Aged, containing 147 beds; the Sisters' Hospital, Scarritt and St. Margaret's hospitals, the Children's Home, St. Joseph's Orphan Asylum, and the college dispensary and obstetric department. Instruction is given by means of lectures, recitations, demonstrations and laboratory work and clinics. The school is a member of the Association of American Medical Colleges. The college building, which has been recently enlarged, furnishes ample accommodations for laboratories and lecture rooms. The course of study covers four years of 30 weeks each, and the work is graded. The total fees for each of the first two years are $100; for the third, $80, and $100 for the fourth year. The Dean is Dr. Samuel C. James, Bryant Bldg. The total number of students registered in 1904-5 was 238; graduates, 58. The twenty-fourth session begins Sept. 5, 1905, and ends April 20, 1906.

KANSAS CITY MEDICAL COLLEGE.—This school was established in 1869, and in 1905 was absorbed by the University of Kansas, becoming the clinical department of the University. The first two years of the course will probably be taught in Lawrence, Kan., the last two in Rosedale, Kan., and Kansas City, Mo. The total registration for 1904-5 was 116; graduates, 34.

MEDICO-CHIRURGICAL COLLEGE.—This school was organized in 1897 as the Kansas City College of Medicine and Surgery, and was reorganized in 1898 under the above name. In 1905 the college became the clinical department of the University of Kansas, together with the Kansas City Medical College and the College of Physicians and Surgeons of Kansas City, Kan. The total registration for 1904-5 was 38; graduates, 12.

KANSAS CITY HAHNEMANN MEDICAL COLLEGE.—This school was formed by the union of the Kansas City Homeopathic Medical Col[illegible] nsas City University College of [illegible] It has a faculty of 43. The [illegible] tal, the Sanitarium Scarritt, [illegible] German, Bethany and Child[illegible] dents for clinical study. The [illegible] upply clinical material. Applicants for admission must show by diploma, certificate or examination that they have a sufficient knowledge of English, arithmetic, geography, United States history and Latin equal to one year's work. The course covers four years of seven months each. The Dean is Dr. Moses T. Runnels, 912 Walnut St. Total registration for 1904-5 was 32; graduates, 9. The next session begins September 5, 1905, and closes April 1, 1906.

ECLECTIC MEDICAL UNIVERSITY.—This was organized in 1898, and has 25 in its faculty. The curriculum covers four years of eight months each. Fees, about $70 each year, with a graduation fee of $15. The Dean is Dr. Theodore Doyle. Total students for 1904-5 was 56; graduates, 17. The next session begins Sept. 11, 1905, and ends April 22, 1906.

HOMEOPATHIC MEDICAL COLLEGE OF MISSOURI.—This was organized in 1857, and has a faculty of 33 professors and 5 assistants, total, 38. The curriculum covers four years of seven months each. Fees: First year, $80; second, $75, third, $60, and $85 for the fourth year. The Dean is Dr. L. C. McElwee, 1221 North Grand Ave., St. Louis. Total registration for 1904-5 was 45; graduates, 7. The next course begins Sept. 10, 1905, and ends April 15, 1906.

St. Joseph.

ENSWORTH MEDICAL COLLEGE.—This was organized in 1873 and has a faculty of 25 professors and 7 lecturers and assistants, 32 in all. Ensworth Hospital, with 250 beds; City Hospital, containing 40 beds; the State Hospital, No. 2, which is open to the students once a week, and a college dispensary furnish clinical material. Applicants for admission must show by certificate or examination that they possess a sufficient knowledge of English, arithmetic, algebra, physics and Latin equal to one year's instruction. The building furnishes ample laboratory and lecture-room facilities. The curriculum covers a graded course of four years of seven months each. The fees are about $55 each for the first three years, and $75 for the fourth year. The Secretary is Dr. J. W. Heddens, 614 Francis St. Total enrolment for 1904-5 was 90; graduates, 22. The next session opens Sept. 15, 1905, and closes April 20, 1906. (This school united with the Central Medical College in 1905, assuming the name of Ensworth-Central Medical College.)

CENTRAL MEDICAL COLLEGE.—This schoo[illegible]
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four years of seven months each. Fees: [illegible]
$50; third, $50, and $75 for the fourth ye[illegible]
C. A. Tygart. Total enrolment for 1904-[illegible]
The next session begins Sept. 15, 1905, and will end April 15, 1906. (College now united with Ensworth Medical College.).

St. Louis.

WASHINGTON UNIVERSITY MEDICAL DEPARTMENT.—This school was organized in 1891 from the St. Louis Medical College, which was founded in 1842. In 1899 the Missouri Medical College, organized in 1840, was added. The f[illegible] ssors, 35 lecturers and instructors, a tot[illegible] ial is [illegible] Louis Mullan[illegible] Uni[illegible] Dispensary, [illegible] Lying-[illegible] Hospital and O'Fallon Dispensary. In addi[illegible] tion to these, [illegible] Hospital and Insane Asylum are used in common with the other schools. The Medical Department is a member of the Association of American Medical Colleges. The college buildings, of which there are two, furnish the best laboratory and lecture-room facilities. The course is four years of eight months each, and the system of study embraces laboratory, didactic and clinical teaching. The total fees for the first year are $126.25; second, $120.25; and for the third, $106.25, and fourth, $101.25. The Dean is Dr. Robt. Luedeking. Total registration of students for 1904-5 was 263; graduates, 64. The next session opens Sept. 29, 1905, and closes May 24, 1906.

ST. LOUIS UNIVERSITY MEDICAL DEPARTMENT (MARION-SIMS-BEAUMONT COLLEGE OF MEDICINE).—This is the Medical Department of the St. Louis University. The faculty is composed of 42 professors, 63 lectu[illegible] a total of 105. Clinical facilities are offered [illegible] or
Rebekah Hospital, [illegible]
Hospital, 50 beds; [illegible] ls,
beds; Good Samari[illegible] and Insane Asylum, each
containing 150 beds, [illegible]

with a capacity of 600 patients. Grand Avenue Dispensary also furnishes good material for practical instruction. This school is a member of the Association of American Medical Colleges. The buildings afford ample laboratory and lecture-room space, and they are well equipped. The course of study embraces laboratory and clinical instruction, with recitations and lectures. The curriculum covers four years of seven months each. The total fees for the first year are $80; for the second and third, $75 each, and $100 for the fourth. The Secretary is Dr. H. W. Loeb, 3559 Olive St. Total number of students registered for 1904-5 was 385; graduates, 103. The next session opens Oct. 1, 1905, and closes May 1, 1906.

ST. LOUIS COLLEGE OF PHYSICIANS AND SURGEONS.—This school was organized in 1878, and has a faculty of 24 professors, 15 lecturers, instructors, etc., a total of 39. The resources for clinical instruction are Jefferson Hospital, which is open to students of this college only; City Hospital, with 600 beds: Female Hospital, having 250 beds; City Insane Asylum; City Poorhouse, and the college dispensary. This college is a member of the Association of American Medical Colleges. The laboratory and lecture-room space and the equipment are ample. The course of study covers four years of seven months each, and is graded. Total fees for the first year are $80; second, $70; third, $75, and $85 for the fourth year. The Dean is Dr. Waldo Briggs, 2600 Gamble St. Total number of students registered, 1904-5, was 275; graduates, 29. The next session begins Sept. 15, 1905, and ends April 12, 1906.

BARNES MEDICAL COLLEGE.—(Medical Department Barnes University.) This school was organized in 1892, and has a faculty of 35 professors and 25 lecturers and assistants, a total of 60. The clinical advantages are those offered by Centenary Hospital, with 150 beds; City Hospital, the college dispensary and the outdoor obstetrical department. The laboratories are well equipped and other facilities ample. The course of study includes graded work for four years of seven months each. The total fees for the first three years are $75 each year, and $85 for the fourth year. The Secretary is Dr. Pinckney French, Missouri Trust Building. Total registration for 1904-5 was 427; graduates, 109. The next session opens Sept. 17, 1905, and closes May 10, 1906.

AMERICAN MEDICAL COLLEGE.—Eclectic. This was organized in 1873, and has a faculty of 17 professors. St. Louis City Hospital and a college dispensary supply ample clinical material. The requirements for admission are those of the National Federation of Eclectic Medical Colleges of which this college is a member. The course of study covers four years of seven months each. The total fees are: Tuition, $75 per year, dissecting material $5 per year for four years, final examination and graduation fee $25. Total registration for 1904-5 was 66; graduates, 16. The Dean is Dr. M. M. Hamlin, 2906 Lawton Avenue. The next session opens Sept. 18, 1905, and closes April 22, 1906.

NEBRASKA.

Nebraska, population 1,066.300, has three medical colleges: The University of Nebraska College of Medicine and John A. Creighton Medical College of Omâha (population 102,555); and Lincoln Medical College, at Lincoln (population 40,169). Board and lodging can be obtained for from $3 to $5 a week.

Lincoln and Omaha.

UNIVERSITY OF NEBRASKA COLLEGE OF MEDICINE.—This was organized in 1880 as the Omaha Medical College. In 1902 an affiliation was entered into with the University of Nebraska, the name being changed to the College of Medicine of the University of Nebraska. The first two years are given at Lincoln. The last two years are given only at Omaha. The faculty is composed of 38 professors and 22 lecturers and assistants, total 60. The Douglas County, Immanuel, Wise Memorial and Omaha Methodist hospitals, together with the college dispensary, furnish an abundance of material for clinical study and demonstration. The course consists of graded studies covering four years of eight months each. The method of instruction consists of didactic and clinical lectures, section clinics, demonstrations, recitations and laboratory work. The college building is well adapted to its purpose, the laboratories being well equipped and the lecture room commodious. The fees, including breakage deposits, are $90 for the first two years, and $100 for the last two years. Total number of students enrolled in 1904-5, 92; graduates, 28. The college is a member of the Association of American Medical Colleges. The Secretary is Dr. Paul H. Ludington, Bee Building. The next annual session will begin Sept. 19, 1905, and end May 24, 1906.

Omaha.

JOHN A. CREIGHTON MEDICAL COLLEGE.—This school, organized in 1892, is the Medical Department of Creighton University, and has a faculty c associates lecturers and assistants, a tota ilities are those of St. Joseph's Hospital, having a clinical amphitheater connected Hospital, with 256 beds: Douglas County and Mercy hospitals, and the college dispensary; the material is abundant and varied. The school is a member of the Association of American Medical Colleges. The building, which was completed in 1898, contains excellent facilities for laboratory and lecture-room work, and the equipment is good. In the methods of instruction, including clinical, didactic and laboratory work, special emphasis is laid on practical work. The course of study embraces four years of eight months each. The total fees for the first two years are $90 each, and $85 for each of the last two years. The Dean is Dr. D. C. Bryant, McCague Bldg. Total number of students registered in 1904-5 was 167; graduates, 34. The thirteenth session opens Sept. 19, 1905, and closes May 1, 1906.

Lincoln.

LINCOLN MEDICAL COLLEGE.—Eclectic. This was organized in 1889, and has a faculty of 28. The requirements for admission are those of the National Confederation of Eclectic Medical Colleges, of which this college is a member. The course of study covers four years of thirty-two weeks each. The total fees for the first year are $80; second, $75; third, $75, and $85 for the fourth year, or $255 for all four years together. The Secretary is Dr. Samuel Metheny. Total number of students for 1904-5 was 81; graduates, 15. The next session begins Sept. 13, 1905, and ends April 20, 1906.

NEW HAMPSHIRE.

New Hampshire, population 411,588, contains one medical college, located in Hanover, population, 1,884.

Hanover.

DARTMOUTH MEDICAL SCHOOL.—This is the Medical Department of Dartmouth College, and was organized in 1797. Its faculty is made up of 18 professors and 2 instructors, 20 in all. The Mary Hitchcock Memorial Hospital, a cottage hospital of 36 beds, supplies the clinical material. Applicants for admission must possess an education at least equivalent to graduation from a registered high school. The laboratories afford good facilities for work. The course covers four years of thirty-two weeks each. Fees: $100 each year. The Dean is Dr. William T. Smith. The total number of students registered for 1904-5 was 60; graduates, 12. The work for the first and second years begins with that of the academic department, commencing Sept. 21, 1905, and closing June 27, 1906; for the advanced classes it begins Aug. 15, 1905, and ends March 30, 1906.

NEW YORK.

New York State, population 7,268,894, has ten medical colleges. Seven of these, College of Physicians and Surgeons, Columbia University, Long Island College Hospital, New York Homeopathic Medical College and Hospital, New York Medical College and Hospital for Women, Eclectic Medical College of the City of New York, Cornell University Medical College and the University and Bellevue Hospital Medical College, are located in New York City, population 3,437,202. This city, with its hospitals and dispensaries, offers abundant clinical material. Board and lodging can be obtained for from $5 to $7 a week.

Albany Medical College is in Albany, a city of 100,000 people, where board and room can be had for from $4 to $5 a week.

The University of Buffalo Medical Department is situated in Buffalo, population 352,387; here board and lodging can be obtained for from $3.50 to $5 per week.

The College of Medicine, Syracuse University, is in Syracuse, a city of 18,374 inhabitants. Board and lodging can be obtained for from $3.50 a week upward.

The laws of the State of New York require of the prospective student of medicine a preliminary education equivalent to that obtainable in a four years' course in any of the public high schools recognized by the regents as maintaining a satisfactory standard. On proof of at least this amount of education, a medical-student certificate will be issued by the state authorities. Certain medical schools of the state have additional requirements.

1. The College of Physicians and Surgeons requires a medical-student certificate issued on the attendance of at least one year's course of study in a college or scientific school registered by the Regents as maintaining a satisfactory standard (or equivalent) or a certificate of the college entrance examination board covering 15 points, each point being the equivalent of a course of five periods weekly throughout the academic year.

2. Cornell University Medical College requires Regents' counts; in algebra 4 counts, plane geometry 4, elementary United States history and civics 2, second year English or its equivalent 8, second year Latin or the first four books of Caeser's Commentaries, or first year Latin and first year German or French or Spanish 8, making a total of 26 counts, with additional counts aggregating 48 counts.

3. University and Bellevue Hospital Medical College requires unconditional matriculation with a medical-student certificate.

4. The College of Medicine, Syracuse University, requires Regents' counts; in Latin 4 counts, plane geometery 4, algebra 2 and inorganic chemistry 2, with additional, aggregating 48 counts.

New York City.

COLLEGE OF PHYSICIANS AND SURGEONS.—This school was organized in 1807 and its present relation, that of Medical Department of Columbia University, was assumed in 1860. The faculty embraces 33 professors and 95 demonstrators, instructors, etc., a total of 128. The Vanderbilt Clinic, where 42,995 patients were treated during the year 1904, and which is equipped with all modern appliances for the study and treatment of disease, and Sloane Maternity Hospital, containing 124 beds, offer exclusive clinical advantages to students of this school. Beside these, Roosevelt Hospital, containing 244 beds; New York Hospital, with 190 beds; Bellevue, 1,100 beds; Presbyterian, 330 beds; St. Luke's, 225 beds; General Memorial, 100 beds, and New York Foundling Hospital, 700; Willard Parker and Reception and Riverside hospitals, 600 beds; Babies' Hospital, 50 beds; St. Mary's Free Hospital for Children, 120 beds, all offer free clinical teaching to matriculants of this school. The laboratories, lecture rooms and amphitheaters are ample in equipment and accommodation; special provisions are made to equip each student thoroughly in each of the laboratories and thus make the work individual. The work is graded, covering four years of eight months each. The Dean is Dr. Samuel Lambert. The total fees for the first year are $255; for the second and third, $250, and $275 for the fourth year. Total registration for 1904-5 was 568; graduates, 178. The next session begins Sept. 27, 1905, and ends June 13, 1906.

Long Island College Hospital.—This was organized in 1858 and has a faculty of 20 professors and 75 assistants, instructors, etc., a total of 95. Long Island College Hospital, containing 300 beds and connected with a four-story maternity hospital; Polhemus Memorial Clinic, Dudley Memorial and Hoagland Laboratory, completely equipped with the most modern apparatus, are all a part of the college. Beside the clinical facilities furnished by these, members of the faculty attend at Kings County, St. John's, Brooklyn, Norwegian, Williamsburg, Methodist Episcopal and the Brooklyn Eye and Ear hospitals, where the students are offered opportunities for clinical study. Many of these also contain out-patier [illegible]; permitting advanced students to attend [illegible] Bedside instruction is also given in the wards [illegible] four years of thirty weeks each. Fees: First year, $195; second, $200; third, $160, and $195 for the fourth year. The Secretary is Dr. Joseph H. Raymond. Total registration, 1904-5, was 414; graduates, 73. The forty-eighth session opens Oct. 2, 1905, and closes June 2, 1906. The summer session has been discontinued owing to the lengthening of the regular session.

Cornell University Medical College.—This department of Cornell University was established in 1898. The faculty is composed of 45 professors and 162 instructors and assistants, a total of 207. The City Hospital, having 1,000 beds; Bellevue Hospital, New York Hospital, Presbyterian, Willard Parker and Reception with 200 beds; New York Skin and Cancer; St. Francis, having a capacity of 230 beds; St. Vincent's, with 200 beds; the Manhattan Eye and Ear Infirmary, in addition to a large college dispensary, furnish the clinical resources; the material is abundant and varied. The first two years of the course are taken at New York or at Ithaca, and the work is devoted to the fundamental scientific subjects. The last two years are spent mostly in practical and clinical work and the hospital advantages are utilized. The Loomis Laboratory, a five-story modern building, is well equipped and supplies ample practical laboratory facilities required in the advanced work. "The essential features of the entire system is the division of the classes of the several years into small sections." Fees: First year, $190; second and third, $180 each, and $200 for the fourth year. The Dean is Dr. William M. Polk. Total registration for 1904-5 was 392; graduates, 74. The next session opens Sept. 27, 1905, and closes June 13, 1906.

University and Bellevue Hospital Medical College.—This is a department of the New York University, and was founded in 1898 by the union of the New York University Medical College, organized in 1841, and the Bellevue Hospital Medical College, organized in 1861. The faculty is composed of 39 professors and 64 instructors, assistants, etc., in all 103. Bellevue and City hospitals, hospitals of the Workhouse and Almshouse, Manhattan State Hospital for the Insane, Willard Parker and Reception hospitals, Riverside Hospital for Contagious Diseases, Randall's Island, Presbyterian, St. Luke's, St. Vincent's, General Memorial, Gouverneur, Columbus, Harlem, New York Foundling, and the Society for the Lying-in hospitals, the New York Eye and Ear Infirmary, and a large college dispensary are open to students of this school for a study of clinical cases. The Carnegie building, a five-story structure adjoining the college, is devoted to laboratory instruction and investigation, and, with the other two large college buildings, affords good laboratory and lecture-room facilities. A new six-story addition to the laboratory building has just been completed. The course of instruction covers four years of eight months each. Actual clinical teaching, in conjunction with and found on laboratory work, recitation and didactic teaching, is emphasized to the greatest possible degree. Fees: First year, $185; second and third, $180 each, and $195 for the fourth year. The Dean is Dr. Edward G. Janeway. Total registration for 1904-5 was 391; graduates, 47. The next session opens Oct. 4, 1905, and closes June 9, 1906.

New York Homeopathic Medical College and Hospital.—This school, organized in 1858, has a faculty of 33 professors and 44 lecturers, instructors, etc., 77 in all. Flower Hospital, adjoining the college and having a completely equipped out-patient department: Metropolitan Hospital, New York Ophthalmic Hospital and the Laura Franklin Free Hospital for Children also furnish clinical facilities. The course covers four years of seven months each. Total fees for the first year, $130; second, $130; third, $125, and $155 for the fourth year. The Dean is Dr. W. H. King, 64 W. 51st St. Total students registered for 1904-5 was 110; graduates, 23. The next session begins Oct. 4, 1905, and ends May 17, 1906.

New York Medical College and Hospital for Women.—Homeopathic. This school was organized in 1863, and has a faculty of 22 professors, 19 lecturers and assistants, total 41. The college hospital and dispensary, the Memorial Hospital for Women, Metropolitan, Ophthalmic and the Laura Franklin Free Hospital for Children afford clinical material. The course covers four years of twenty-six weeks each. Fees: First year, $145; second, $140; third, $135, and $155 for the fourth year. The Dean is Dr. M. Belle Brown, 30 W. 51st St. Total registration for 1904-5 was 34; graduates, 9. The next session opens Oct. 2, 1905, and closes May 9, 1906.

Eclectic Medical College of the City of New York.—This was organized in 1865, and has a faculty of 15 professors and 19 lecturers, demonstrators, etc., 34 in all. A college dispensary, Beachonian Dispensary, Manhattan and Red Cross hospitals and Muncie Sanatorium supply clinical facilities. The work covers four years of seven months each. The total fees: First year, $125; second, $125; third, $125, and $155 for the fourth year. The Dean is Dr. George W. Boskowitz. Total registration for 1904-5 was 99; graduates, 13. The next session opens Sept. 27, 1905, and closes May 1, 1906.

Albany.

Albany Medical College.—This school was organized in 1838, and in 1873 it assumed its present relations, as Medical Department of Union University. The faculty is composed of 15 professors and 57 lecturers, instructors and assistants, a total of 72. Albany, St. Peter's, Child's and County hospitals, South End Dispensary, Eye and Ear Infirmary and the Albany Hospital for Incurables, also the free dispensaries connected with each, are open to students for clinical study. The curriculum embraces graded work for four years of seven and one-half months each. Teaching is carried on in the laboratories, clinics and lecture rooms. Examinations are held twice a year in all subjects. Fees: Third year, $110, and $130 for each other year. The Dean is Dr. Samuel B. Ward. Total registration for 1904-5 was 172; graduates, 52. The next annual session opens Sept. 26, 1905, and closes May 8, 1906.

Buffalo.

University of Buffalo Medical Department.—This was organized in 1846 and has a faculty made up of 46 professors and 36 assistants, lecturers, etc., a total of 82. Buffalo General Hospital, Hospital of the Sisters of Charity, Erie County and German hospitals and the German Deaconess' Hospital supply ample clinical material for study. A college dispensary, recently organized, is also of value in practical work. The buildings and hospitals are well equipped for clinical and laboratory work. Bedside instruction is insisted on and the senior students are permitted to assist in operations and give anesthetics. This school is a member of the Association of American Medical Colleges. The course covers four years of seven months each. The tuition is $125 each year; this does not include laboratory fees. The Dean is Dr. Matthew D. Mann, 37 Allen St. Total registration for 1904-5 was 231; graduates, 37. The sixtieth session opens Sept 25, 1905, and closes May 31, 1906.

Syracuse.

College of Medicine, Syracuse University.—This school was organized in 1872 as the Medical Department of Syracuse University. The faculty is composed of 15 professors and 39 lecturers, instructors, etc., in all 54. Clinical facilities are furnished by St. Joseph's Hospital, with a capacity of 200 patients; Hospital of the House of the Good Shepherd, Syracuse Hospital for Women and Children, Onondaga County Orphan Asylum, and the Syracuse Free Dispensary. The laboratories and amphitheaters are large and well equipped. This school is a member of the Association of American Medical Colleges. The curriculum embraces a four years' graded course, eight months making a school year. The total fees for each of the four years are $130. Beginning with the session of 1905-6, additional laboratory and graduation fees will be required, making the average total fee for each year $167.25. The Dean is Dr. Henry D. Didama, 424 S. Salina St. Total number of students registered for 1904-5 was 154; graduates, 31. The next session opens Oct. 3, 1905, and closes June 13, 1906.

NORTH CAROLINA.

North Carolina, population 1,893,810, has four medical schools which grant degrees and one which gives only the first two years of the medical course. The Medical Department of the University of North Carolina is located at Chapel Hill (population 1,099) and at Raleigh (population 13,643). The Leonard School of Medicine is at Raleigh. The North Carolina Medical College is located at Davidson (population 904), and at Charlotte (population 18,000). Wake Forest School of Medicine is at Wake Forest (population 823).

Chapel Hill and Raleigh.

University of North Carolina Medical Department.—This school was organized in 1891, and formerly gave only the work of the first two college years at Chapel Hill. In 1902 the course was extended to four years by the establishment of a department at Raleigh, in which the last two years are given. Degrees are now conferred and the faculty in the completed school of medicine numbers 29. It is a member of the Association of American Medical Colleges. The number of students enrolled in 1904-5 was 100; graduates, 11. Total fees are $85 per year. Board, room, light and heat may be had from $84 to $102 per college year. The President is Dr. F. P. Venable, Chapel Hill. The next session will begin Sept. 11, 1905, and end June 6, 1906.

Raleigh.

Leonard School of Medicine.—Colored. This department of Shaw University was established in 1882 by the American Baptist Home Mission Society to train colored students of medicine. It has a faculty of 10. A free hospital and dispensary supply clinical material. A preliminary entrance examination is given to applicants not possessing a certificate or diploma of educational requirements. The course covers four years of seven months each. The total fees for each year are $75. The dormitory plan is adopted generally, and board and room costs $2 a week. The Dean is Dr. James McKee. Total enrolment for 1904-5 was 136; graduates, 21. Next session opens Oct. 1, 1905, and closes April 14, 1906.

Davidson and Charlotte.

North Carolina Medical College.—This school was organized in 1893, and has a faculty of 21. The Presbyterian Hospital in Charlotte supplies the clinical facilities. The course covers four years of eight months each; the last year at Charlotte. Fees: First three years, $85 each, and $100 for the fourth year. The President is Dr. J. P. Monroe of Davidson; Dr. I. W. Faison, Charlotte, is Dean of the Faculty. The total registration for 1904-5 was 81; graduates, 26. The next session begins Sept. 7, 1905, and closes April 2, 1906.

Wake Forest.

Wake Forest School of Medicine.—This school was organized in 1902. It only gives the first two years of the medical course. Each annual course extends over nine months. The school is a member of the Association of American Medical Colleges. It has a faculty of 10, and last year enrolled 18 students. The fees are $85 a year. The Dean is Dr. Frederick K. Cooke. The next session opens Aug. 31, 1905, and closes May 26, 1906.

OHIO.

Ohio, population 4,157,545, has ten medical colleges. Four of these, the Medical College of Ohio, Eclectic Medical Institute, Miami Medical College, and Pulte Medical College are located in Cincinnati, a city of 325,902 inhabitants. The clinical advantages of Cincinnati are good; beside many smaller hospitals, the Cincinnati Hospital is open to the students for study. Board can be procured in Cincinnati for from $3 to $5 per week. The Laura Memorial Woman's Medical College has ceased to exist.

Cleveland, population 381,768, contains three medical schools: Western Reserve University Medical College, Cleveland College of Physicians and Surgeons and the Cleveland Homeopathic Medical College. The City Hospital, with 275 beds, is used in common by them for clinical study. Board and lodging can be had for from $2.50 to $5 a week.

Columbus, population 125,560, contains two: Starling Medical College and Ohio Medical University. Board and lodging cost from $2.50 to $5 per week.

Toledo, with 131,822 people, has one medical school: Toledo Medical College. It has good clinical advantages. Board and room can be had for from $3 to $5 a week.

Cincinnati.

Medical College of Ohio.—This is the Medical Department of the [illegible] ized in 1819, and has a faculty made [illegible] ers and assistants, a total of 56. Good [illegible] 100 beds; Cincinnati Hospital, with [illegible] college dispensary furnish clinical [illegible]. The buildings supply ample laboratory and lecture-room space, and their equipment is good. The course of study is graded and covers four years of eight months each. This school is a member of the Association of American Medical Colleges. The lecture fees are $125 each year for each student entering after July 1, 1903; $100 each year for those who have matriculated prior to July 1, 1903. In addition there is a matriculation fee of $5, payable but once, and a graduation fee of $25. Total registration of students for 1904-5 was 121; graduates, 33. The Dean is Dr. P. S. Conner, Cincinnati. The next session begins Sept. 28, 1905, and ends May 30, 1906.

Miami Medical College.—This school was organized in 1852, and has a faculty of 23 professors and 35 lecturers and demonstrators, a total of 58. The clinical facilities are furnished by the Cincinnati Hospital and a college dispensary. This college is a member of the Association of American Medical Colleges. The curriculum embraces a four-year graded course of eight months each. The total fees are, for the first year, $130; for the second and third, $125, and $150 for the fourth year. The Dean is Dr. J. C. Oliver, 628 Elm St. The total registration for 1904-5 was 85; graduates, 24. The next session opens Oct. 1, 1905, and closes June 1, 1906.

Eclectic Medical Institute.—This school, organized in 1845, has a faculty of 21 members. The Seton Hospital, Cincinnati Hospital, and a college dispensary furnish clinical material. It is a member of the National Confederation of Eclectic Medical Colleges. The course covers four years of thirty weeks each. The fees are $75 for each year, with a graduation fee of $25. The Dean is Dr. Rolla L. Thomas, 792 East McMillan St. Total enrolment, 1904-5, was 135; graduates, 18. The next session begins Sept. 18, 1905, and closes April 18, 1906.

Pulte Medical College.—Homeopathic. This was organized in 1872 and has a teaching force of 21 professors and 17 assistants, 38 in all. Pulte Hospital, Cincinnati Hospital, Bethesda Hospital, Home of the Friendless and Foundlings, and a college dispensary supply clinical material. The curriculum covers four years of seven months each. Fees: First year, $80; for the second and third, $75 each, and $100 for the fourth. The Dean is Dr. Charles E. Walton. Total enrolment for 1904-5 was 18; graduates, 5. The next session opens Sept. 27, 1905, and closes May 1, 1906.

Cleveland.

The Cleveland College of Physicians and Surgeons.—This school was organized in 1863 as Charity Hospital Medical College, became the Medical Department of Wooster University in 1869, and the Medical Department of the Ohio Wesleyan University in 1896, when it assumed its present title. The faculty is composed of 28 professors, 8 assistant professors, 29 lecturers, assistants, instructors, etc, 59 in all. Cleveland General Hospital, Cleveland City Hospital and a college dispensary are used for regular clinical teaching. St. Alexis, St. John's, St. Clair and Mt. Sinai hospitals are utilized for extra-mural clinics. This school is a member of the Association of American Medical Colleges. The school is co-educational. The total annual fees are $130. The curriculum covers four years of eight months each. The Dean is Dr. R. E. Skeel, 785 Prospect St. Total enrolment for 1904-5 was 84; graduates, 16. The next term opens Sept. 20, 1905, and closes May 4, 1906.

Western Reserve University Medical College.—The Medical Department was organized in 1843. Its teaching faculty includes 23 professors, 31 lecturers, demonstrators and assistants, a total of 54. Clinical facilities are offered students of this school by Lakeside Hospital, having 250 beds; St. Vincent's Hospital, having about 150 beds; City Hospital, with 250 beds; St. Alexis Hospital, with 250 beds, and the Home of Maternity, with the dispensary service at Lakeside and Charity hospitals, and a tuberculous dispensary at the college. The laboratory chairs are endowed, the teachers devoting their entire time to teaching and research work. A clinical laboratory has recently been added, where a systematic course of instruction is given. This college is a member of the Association of American Medical Colleges. The curriculum embraces four years of eight months each. Three years of college work are required for admission to first year of medical course. The total fees are $125 for each year. The Dean is Dr. B. L. Millikin, 260 Euclid Avenue. Total enrolment for 1904-5 was 73; graduates, 6. The next session begins Oct. 1, 1905, and closes June 4, 1906.

Cleveland Homeopathic Medical College.—This school was founded in 1897 by a consolidation of Cleveland University of Medicine and Cleveland Medical College, the former of which was incorporated in 1850, and is the second oldest homeopathic medical college in the United States. The faculty includes 34 professors and 29 adjuncts, lecturers, etc., 63 in all. The clinical facilities are obtained from the Cleveland Homeopathic Hospital, the Cleveland City Hospital, the Cleveland Maternity Hospital, and a college dispensary. The course embraces four years of thirty weeks each. Fees: First year, $110; second and third years, $105 each, and $125 for the fourth year. The Dean is Dr. Gaius J. Jones. Total number of students registered, 1904-5 was 66; graduates, 24. The next session opens Sept. 27, 1905, and closes May 16, 1906.

Columbus.

Ohio Medical University.—This school was organized in 1890, and has a faculty of 22 professors, 6 instructors, 5 assistants and 2 demonstrators, 35 in all. The protestant Hospital, State Hospital, Ohio Penitentiary Hospital and a college dispensary provide material for clinical work. This school is a member of the Association of American Medical Colleges. The course is four years of 34 weeks each. Fees: First year, $105; second year, $100; third year, $100, and $110 for the fourth year. The Dean is Dr. George M. Waters. Total students for 1904-5 was 158; graduates, 37. The next session begins Sept. 12, 1905, and ends May 8, 1906.

Starling Medical College.—This school was organized in 1847 and has a faculty composed of 20 professors and 16 lecturers, associates, etc., a total of 36. St. Francis Hospital, which is under the control of this faculty; Hawkes' Hospital of Mt. Carmel, the Lawrence Hospital, St. Anthony Hospital and a college dispensary are available for clinical study. This college is a member of the Association of American Medical Colleges. The work covers four years of thirty weeks each. Fees: $100 per year; matriculation fee, $5; graduation fee, $10. The Dean is Dr. Starling Loving. Enrolment for 1904-5 was 105; graduates, 30. The next session opens Sept. 13, 1905, and closes May 5, 1906.

Toledo.

Toledo Medical College.—The school was organized in 1882, and in 1904 became the Medical Department of Toledo University. It has a faculty of 20 professors, 20 lect[illegible] all 40. Toledo Hospital, St. Vincent's ar[illegible] Lucas County Infirmary Hospital, Toledo [illegible] and a free dispensary supply clinical facilities. This college is a member of the Association of American Medical Colleges. The curriculum embraces four years of eight months each. The fees are $75 for each year, with a matriculation fee of $5, payable once. The Dean is Dr. W. A. Dickey, 10 Hartford Block. Total enrolment for 1904-5 was 83; graduates 7. The next session opens Sept. 22, 1905, and closes May 11, 1906.

OKLAHOMA.

Oklahoma, population 398,331, has only one medical school, which is located at Norman, a city of about 3,682 inhabitants.

Norman.

School of Medicine, University of Oklahoma.—This school, which was organized in 1903, teaches only the first two years of the regular medical course, each course extending over a period of nine months. Total registration for 1904-5 was 8. The Dean is Dr. R. P. Stoops; the Registrar, Roy Hadsell. The next session begins Sept. 12, 1905, and ends June 9, 1906.

Oklahoma City.

College of Medicine Epworth University.—In 1904 only the first year of the medical course was given, but beginning October, 1905, the full four years' course will be taught. The faculty consists of 15 professors and 12 assistants, instructors, etc., a total of 27. The Oklahoma City, St. Anthony's hospitals, Amie Rescue Home and a college dispensary furnish material for clinical instruction. The laboratories are well supplied and the lecture rooms are large, well lighted and well ventilated. The entrance requirement is a high school diploma or its equivalent. The course of study embraces graded work for four years of seven months each. The total fees are about $70 each year. The Dean is Dr. A. K. West; Secretary, Dr. H. C. Todd. The registration for 1904-5 was 7; no graduates. The next session begins Oct. 3, 1905, and ends May 11, 1906.

OREGON.

Oregon, population 413,536, has two medical colleges: Medical Department Willamette University, located in Salem, a city of 10,000 people, and University of Oregon Medical Department, in Portland, a city of about 125,000 population. Board and lodging may be obtained in Salem for from $3 to $5 per week, and in Portland for from $4 to $6.

Salem.

Medical Department Willamette University.—The school was organized in 1864. The faculty consists of 19 teachers. Clinical facilities for study are supplied by Salem Hospital, and a college dispensary. This school is a member of the Association of American Medical Colleges. The course embraces four years' work of six months each. Fees: First year, $110; second, $100; third, $75, and $50 for the fourth year. The Dean is Dr. W. H. Byrd. Total enrolment for 1904-5 was 50; graduates, 7. The next session begins Oct. 1, 1905, and ends March 30, 1906.

Portland.

University of Oregon Medical Department.—This department of the State University was organized in 1887, and has a faculty of 14 professors and 14 assistants, lecturers, etc., a total of 28. Good Samaritan and St. Vincent's hospitals, containing 200 and 350 beds, respectively, and Multomah County Hospital furnish good material for clinical study. The requirements for admission are those of the Association of American Medical Colleges, but the members of the faculty do not hold examinations for entrance. *The college building is modern and well equipped, presenting ample teaching facilities.* The course is four years of seven months each. Fees: First year, $142.50; second, $137.50; third, $107.50, and for the fourth, $57.50. The Dean is Dr. Simeon E. Josephi, Portland. The total number of students for 1904-5 was 102; graduates, 26. The next session opens Sept. 15, 1905, and closes April 30, 1906.

PENNSYLVANIA.

Pennsylvania, population 6,302,115, has seven medical colleges. Of these Philadelphia, having a population of 1,293,697, contains six as follows: University of Pennsylvania Department of Medicine, Jefferson Medical College, Hahnemann Medical College, Woman's Medical College of Pennsylvania, Medico-Chirurgical College of Philadelphia and Temple College Department of Medicine. The clinical facilities of Philadelphia present abundant and varied material for study. Beside the individual hospitals connected with each of the schools the charity hospitals are open to all the students in common. *Board and lodging costs from $4 a week upward.*

The other school, Western Pennsylvania Medical College, is situated in Pittsburg, a city of 321,616 people. The cost of board and lodging is from $4 to $6 a week.

Philadelphia.

University of Pennsylvania Department of Medicine.—This is the first medical college established in this country, having been organized in 1765 as the Medical Department of the College of Philadelphia; the first degree was granted in 1768. When from the College of Philadelphia the University of Pennsyylvania was organized, in 1791, it became the Medical Department of the University, its present relation. The faculty is made up of 27 professors, 2 associate professors, 4 adjunct professors, 7 assistant professors, 97 demonstrators, lecturers, assoociates, instructors, etc., a total of 137. Abundant and varied clinical material is furnished by the University Hospital, capacity 300 beds, which treats over 14,000 [illegible] Maternity Pavillion, with 50 beds; [illegible] aining 1,000 beds; Pennsylvania, Child[illegible] Hospital and Dispensary. Special attention is paid to bedside instruction and to thoroughly practical work. Applicants for admission must furnish evidence of the education required to enter the academic department of the university. The buildings known as Medical Hall, Medical Laboratory Building, the laboratories of Pathology, Physiology and Pharmacology, the Laboratory of Hygiene, the Wistar Institute of Anatomy, and the Wm. Pepper Clinical Laboratory supply excellent laboratory and lecture-room facilities and are well equipped. The course embraces study for four years of nine months each. The total fees for each year are $200, with a matriculation fee of $5 for the first year. The Dean is Dr. Charles H. Frazier. Total enrolment for 1904-5 was 546; graduates, 116. The next session opens Sept. 29, 1905, and closes June 20, 1906.

Jefferson Medical College of Philadelphia.—This school was organized in 1825, and has a faculty of 29 professors and 81 lecturers, demonstrators, etc., a total of 110. Jefferson Hospital, together with its maternity Department, are used exclusively by students of the school for clinical study. *Bedside instruction is given* daily to small sections of the senior class. In addition, the following hospitals are open for study of clinical cases: Pennsylvania, Philadelphia, St. Joseph's, German, Municipal and Wills Eye hospitals. The course of study covers graded work of four years of eight months each. The laboratories are large and well equipped, a new five-story laboratory building having recently been added: the lecture rooms and amphitheaters are also ample. A new fireproof hospital is now building, to cost $1,000,000, to be finished in 1906. The tuition is $180 a year, with a matriculation fee of $5, paid but once. The Dean is Dr. James W. Holland. The total number of students for 1904-5 was 676; graduates, 179. The next session opens Sept. 25, 1905, and closes June 4, 1906.

Medico-Chirurgical College of Philadelphia.—This school was organized in 1881, and has a faculty made up of 25 professors and 55 assistants, lecturers, etc, 80 in all. Opportunities for clinical study are offered exclusively to students of this school by the Medico-Chirurgical Hospital, with 125 beds, and its children's and maternity hospital, having 30 beds. In common with other schools, the following are used: Philadelphia, Pennsylvania, German, Samaritan, St. Joseph's, St. Agnes', St. Mary's, Methodist, Jewish and the Philadelphia Lying-in hospitals. This school is a member of the Association of American Medical Colleges. With new laboratories, lecture rooms, a modern hospital and fine clinical amphitheater, this college is amply provided and the equipment is good. The work embraces four years of eight months each. Fees: $150 per annum; matriculation, $5, payable once. The Dean is Dr. Seneca Egbert. Total enrolment, 1904-5 was 461; graduates, 86. The next session opens Sept. 25, 1905, and will close June 2, 1906.

Woman's Medical College of Philadelphia.—This school was organized in 1850, and has a faculty of 10 professors and 38 assistants, lecturers, etc., in all 48. Clinical facilities are offered by the Hospital of the Woman's Medical College of Pennsylvania, Woman's Hospital, West Philadelphia Hospital for Women, German, Jewish, Children's and Philadelphia hospitals, Presbyterian hospital, Wills Hospital for Diseases of the Eye, the Howard Hospital and the Philadelphia Lying-in Charity. This school is a member of the Association of Ameriacn Medical Colleges. The lecture room and laboratory equipment is good. The curriculum covers four years of eight months each. Fees: First year, $140; second, $145; third, $135.50, and $100.50 for the fourth year. The Dean is Dr. Clara Marshall. Total enrolment for 1904-5 was 151; graduates, 42. The next session begins Sept. 27, 1905, and will end may 23, 1906.

Hahnemann Medical College and Hospital.—Homeopathic. This was organized in 1848, and has a fa[illegible] and 56 lecturers, instructors, etc., in all 73. [illegible] Hospital and Pennsylvania Hospital furnish [illegible] work. The requirements for admission are those established by the Intercollegiate Committee of the American Institute of Homeopathy. The work covers four years of thirty-two weeks each. Fees: For each year, $150; matriculation, $5. Total number of students for 1904-5 was 164; graduates, 44. The Dean is Dr. Charles M. Thomas. The next session begins Sept. 25, 1905, and will end May 24, 1906.

Medical Department of the Temple College.—This department was organized in 1901, and has a faculty of 18 professors and 22 assistants, etc., a total of 40. Instruction is given in the afternoon and evening, and the course extends over five years of nine months each. The fees are $125 per year. The Dean is Dr. I. Newton Snively. The enrolment for 1904-5 was 87; graduates, 2. School opens Sept. 18, 1905, and closes June 15, 1906.

Pittsburg.

Western Pennsylvania Medical College.—This is the Medical Department of the Weste[illegible]nsylvania, and was organized in 1886. The [illegible] 38 professors and 54 associates, assistants, e[illegible] material for study [illegible] college dispensary, and the Emma Kaufman [illegible]aternity Hospital, Mercy, South Side, Passa[illegible] hospitals. This school is a member of the Association of American Medical Colleges. The course of study embraces graded work for four years of nine months each. Special attention is given to practical bedside work. The total fees are $150 for each year. The Dean is Dr. J. C. Lange. Total enrolment for 1904-5 was 281; graduates, 53. The next session begins Oct. 1, 1905, and will close June 1, 1906.

PHILIPPINE ISLANDS.

Manila.

University of Saint Thomas Medical Department.—The University was founded by a papal decree in 1587, and the medical school was added in 1871. The faculty consists of 81 teachers. The course extends over a period of six years of nine months each. The first year is a preparatory one, devoted to the teaching of physics, chemistry and biology. The degree of licenciado is conferred at the conclusion of the fifth year, and the degree of doctorado at the end of the sixth year, during which only special work is done. This last year is optional, the degree of licenciado entitling the holder to all the rights and privileges of the medical practitioner. The degree is equivalent to the English M.B. The Rector of the University is Dr. Fr. Raymundo Velasquez; the Secretary of the medical department is Lic. Blas C. Alcuaz. Total registration for 1903-4 was 68; graduates, 14. The course began July 2, 1904, and ended March 7, 1905.

SOUTH CAROLINA.

South Carolina, population 1,340,316, has one medical college, situated in Charleston, a city of 55,807 people. Board and room can be obtained for from $12 to $16 a month.

Charleston.

The Medical College of the State of South Carolina.—This school was founded in 1823. The faculty is made up of 10 professors and 10 assistants, etc., 20 in all. The clinical facilities are those offered by the City Hospital, where surgical, obstetrical and medical instruction is given. Applicants for matriculation must show a diploma of graduation from some literary or scientific institution of learning or a certificate from some legally constituted high school. The course covers four years of six months each. The total fees for each of the first two years are $100, and $75 each for the last two. The Dean is Dr. Francis L. Parker. Total enrolment for 1904-5 was 87; graduates, 28. The next session opens Oct. 1, 1905, and closes April 15, 1906.

TENNESSEE.

Tennessee, population 2,020,616, has ten medical colleges. Of these the Medical Department of the University of Nashville, Vanderbilt University Medical Department, University of Tennessee Medical Department, and Meharry Medical College are situated in Nashville, a city with a population of 80,865. The City Hospital, containing 100 beds, is used by all the schools in common for clinical study. Board and lodging cost from $3 to $4 a week.

Knoxville, population 32,637, contains two colleges, Tennessee Medical College and Knoxville Medical College. The cost of room and board in that city is from $2.50 to $4 a week.

Chattanooga Medical College and Chattanooga National Medical College are situated in Chattanooga, a city of 30,154 people. Board and lodging cost there from $2 a week upward.

Memphis Hospital Medical College is located in the growing city of Memphis, population 102,320. Good board can be obtained for from $3 to $4 a week.

The University of West Tennessee is in Jackson, whose population is 15,000.

The other school, the Sewanee Medical College, is located at Sewanee, a mountain town of 1,200 people.

Nashville.

University of Nashville Medical Department.—This school, established in 1850, has a faculty of 12 professors and 11 lecturers, assistants, etc., in all 23. This school is a member of the Southern Medical College Association. The course of study covers four years of twenty-six weeks each. The tuition for each of the four years is $65. The Dean is Dr. William G. Ewing. Total enrolment for 1904-5 was 317; graduates, 75. The next session begins Oct. 2, 1905, and ends March 30, 1906.

Vanderbilt University Medical Department.—This school was founded in 1874, and in 1895, when the present medical building was completed, the course was extended, the standard raised. The present faculty of 35 consists of 20 professors and 15 lecturers, etc. The school is a member of the Southern Medical College Association. The course covers four years of seven months each. The minimum entrance requirement is a high school diploma or its equivalent. The total fees for the first three years are $105 each, and $130 for the fourth year. The Dean is Dr. William L. Dudley. Total enrolment for 1904-5 was 159; graduates, 35. The next session begins on or about October, 1905, and ends in April, 1906.

University of Tennessee Medical Department.—This was organized in 1876 as the Nashville Medical College; its present relations were assumed in 1879. The faculty is composed of 20 professors and 5 lecturers, assistants, etc., 25 in all. The school is a member of the Southern Medical College Association. The course of study includes work for four years of six months each. The total fees for each of the first three years are $65 and $90 for the fourth year. The Dean is Dr. Paul F. Eve, 614 Broad St. Total enrolment for 1903-4 was 164 students; graduates, 33. The next session begins Oct. 2, 1905, and ends April 2, 1906.

Meharry Medical College.—Colored. This school was organized in 1876 as the Medical Department of Central Tennessee College, now Walden University, "for the purpose of furnishing to the colored people of the South an opportunity of obtaining a medical education." The faculty is made up of 10 professors and 12 instructors, demonstrators, etc., 22 in all. The work embraces a four-year graded course, seven months to the year. The total fees for the first three years are $40 each, and $50 for the fourth year. The Dean is Dr. G. W. Hubbard. Total registration for 1904-5 was 328; graduates, 59. The next session begins Sept. 1, 1905.

Knoxville.

Tennessee Medical College.—This school was organized in 1889, and has a faculty of 14 professors and 12 assistants, 26 in all. A new building with large and well-fitted laboratories has been completed. City General Hospital and a fee dispensary supply material for study of clinical cases. This school is a member of the Southern Medical College Association. The curriculum includes graded work for four years of seven months each. Fees: Matriculation, $5; annual fee, $50; graduation fee, $25. The Secretary is Dr. S. L. Jones. Total number of students for 1904-5 was 92; *graduates*, 13. The next annual session begins Nov. 1, 1905, and closes June 1, 1906.

Knoxville Medical College.—Colored. This school was established in 1900, following the discontinuance of the Medical Department of Knoxville College, organized in 1895. The teaching force comprises 12. The course covers four years of seven months each. Fees: $40 per year. The Secretary is Dr. H. M. Green. Total number of students for 1904-5 was 47; *graduates*, 6. The next session opens Nov. 10, 1905, and closes June 1, 1906.

Chattanooga.

Chattanooga Medical College.—This is the Medical Department of Grant University, and was organized in 1889. The faculty consists of [illegible] instructors, demonstrators, etc., total 26. [illegible] ilities are afforded by the wards of Barone [illegible] a county asylum, an outdoor clinic main [illegible] building, and all material furnished by the [illegible] which the faculty desire to utilize. The scholastic requirements are those of the Southern Medical College Association, of which this school was a charter member, and to which it belongs. These requirements involve a strictly graded course covering four years of six months each. The total fees approximate $55 each session. The trustees materially added to the general facilities of the institution by the erection of another fine four-story building of brick and stone for the medical department three years ago, wherein much modern and elaborate equipment has been installed. The Dean is Dr. E. A. Cobleigh. The total enrolment for the session of 1904-5 was 268; graduates, 39. The next session opens about Oct. 1, 1905, and ends about April 7, 1906.

Memphis.

Memphis Hospital Medical College.—This school, organized in 1878, has a faculty of 10 professors and 18 assistants, beside quiz masters. Excellent clinical facilities are furnished by the City Hospital, Presbyterian Hospital, St. Joseph's Hospital and the East End Dispensary, the latter being located in the college building. The course includes graded work for four years of six months each. The total fees for the first three years are $65; for the fourth, $90. The Dean is Dr. W. B. Rogers. Total registration for 1904-5 was 476; graduates, 151. The twenty-sixth annual session will begin Oct. 1, 1905, and close April 30, 1906.

Jackson.

Medical Department of the University of West Tennessee.—Colored. This school, organized in 1900, has a faculty of 12. The course is four years of seven months each. The fees are $40 per year; graduation, $10 extra. Registration for 1904-5 was 33; graduates, 6. The next session opens Sept. 18, 1905, and closes April 18, 1906.

Sewanee.

Medical Department of the University of the South (Sewanee Medical College).—This school was organized in 1891, and has a faculty of 23. It is a member of the Southern Medical College Association. The course is four years of seven months each. The fees are $65 for each of the first two years, $55 for the third and $80 for the last year. The Dean is Dr. John S. Cain. Total enrolment for 1904-5 was 132: graduates, 36. The fourteenth session commences April 1, 1905, and will close October 25, 1905.

TEXAS.

Texas, population 3,048,710, has seven medical colleges. The University of Texas Department of Medicine is located at Galveston, a city of 37,789 inhabitants. Good board and room can be procured for from $15 to $20 a month.

The Medical Department of Fort Worth University is at Fort Worth, population 35,000. The cost of board and room in that city is from $12 to $15 a month.

The Baylor University College of Medicine, the Medical Department of Southwestern University, the College of Physicians and Surgeons, and the Physio-Medical College of Texas are situated in Dallas, population 55,000.

The Gate City Medical College is situated in Texarkana.

Dallas.

Baylor University College of Medicine.—This is a new name for the University of Dallas Medical Department, which was organized in 1901. In June, 1903, it became the Medical Department of Baylor University at Waco. The faculty numbers 20 professors and 16 assistants, total 36. Parland Hospital, with 90 beds; St. Paul's Sanitarium, Baptist Memorial Hospital and a college dispensary and hospital are utilized for clinical study. The course covers four years of seven months each. The school is a member of the Association of Southern Medical Colleges. The fees are $75 *for each of the four years*, with a matriculation fee of $5 paid once, and a graduation fee of $25. The Dean is Dr. E. H. Cary. Total registration for 1904-5 was 132; graduates, 36. The next session opens Oct. 2, 1905, and closes May 1, 1906.

Galveston.

University of Texas Medical Department.—This department of the State University was organized in 1891, and has a faculty of 27. The John Sealy Hospital, also having an outdoor department, and St. Mary's Infirmary supply good material for clinical study. The requirements for admission are proof, either by certificate or examination, that the candidate is sufficiently proficient in English, including grammar, composition and rhetoric; mathematics through plane geometery and algebra, including quadratics, and general history. The curriculum embraces graded work for four years of eight months each. [illegible] stry, physiology, pharmacology, anatomy, [illegible] histology, pharmacy and clinical medicine [illegible] for practical work by students. Fees, to re [illegible] irst year, $50; second and third, each $20, [illegible] for the fourth. Non-residents of the state are required to pay an additional fee of $50 each year. The President is Dr. William L. Prather; the Dean is Dr. William S. Carter. Total registration for 1904-5 was 169; graduates, 23. The next session begins Oct. 7, 1905, and ends May 31, 1906.

Ft. Worth.

Medical Department of Fort Worth University.—This school was organized in 1894, and has a faculty of 15 professors and 17 lecturers, assistants, etc., in all 32. Clinical facilities are supplied by St. Joseph's Hospital, with 200 beds; the Benevolent Home, containing 75 beds; the Gelia Collins' Rescue Home, having 50 beds, and a college dispensary. The school is a member of the Southern Medical College *Association*. The course covers four years of six months each. The total fees for each of the first three years are $75 and $100 for the fourth year. The Dean is Dr. Frank Gray. The total enrolment for 1904-5 was 191; graduates, 21. The next session opens Oct. 2, 1905, and closes April 6, 1906.

Southwestern University Medical College.—This is the Medical Department of Southwestern University and was organized in June, 1903. It has a faculty of 18 professors and 19 instructors, total 37. The course of instruction is graded and covers four years in medicine and two in pharmacy. Requirements for admission are equivalent to those prescribed by the Association of American Medical Colleges. The fees are: Matriculation, $5, paid once; annual tuition, $75; graduation, $25. The hospitals represented by the faculty and open for clinical teaching are: St. Paul's Sanitarium, Cit[illegible] Home, Rescue Home, Woman's Home, St. [illegible] Matthew's Home for Children, Dr. H. K. L[illegible], Out Door Clinic of the Settlement Home and Presbyterian Home for Children. The Dean is Dr. John O. McReynolds. Total registration 1904-5 was 65; graduates, 14. The third session opens Oct. 2, 1905, and closes May 3, 1906.

College of Physicians and Surgeons.—This school was founded in 1904, and in 1905 the name was changed to College of Physicians and Surgeons. It has a total teaching staff of 15. The course of instruction extends over four years of six months each. The requirements for admission are the same as those prescribed by the Association of Southern Medical Colleges. Clinical instruction is given in the City Hospital, St. Paul Sanitarium and the college dispensary. The fees for the first three years are $80, and $105 for the fourth year. The Dean is Dr. A. C. Bell. Total registration for 1904-5 was 108; graduates, 17. The next session begins Oct. 3, 1905, and closes April 3, 1906.

Physio Medical College of Texas.—This college was organized in 1902. It has a faculty of 24 professors and 4 assistants, total 28. The course is four years of thirty weeks each. The fees are, first year, $70; fourth year, $85; other years, $65. Enrolment 1904-5 was 42; graduates, 5. The Secretary is Dr. R. L. Spann. The next session opens Oct. 15, 1905, and closes May 15, 1906.

Texarkana.

Gate City Medical College.—The length of each course is seven months. The faculty numbers 20 professors and assistants. Registration 1904-5 was 109; graduates, 26. The Dean is Dr. J. W. Decker. The next session begins Oct. 26, 1905, and ends May 4, 1906.

VERMONT.

Vermont, population 343,641, has one medical school, located at Burlington, a town of about 20,000 people. Board and room costs from $3.50 to $5 a week.

Burlington.

University of Vermont College of Medicine.—This school was organized in 1822, but suspended from 1836 until 1854, when it was reorganized. The faculty consists of 20 professors and 21 assistants, instructors, etc., in all 41. The Mary Fletcher Hospital and a free dispensary furnish material for clinical instruction. Applicants for admission must be graduates of a four-year high school course or take an examination to show equivalent educational qualifications. The laboratory and lecture-room space and equipment are good. A new and commodious college building is nearly completed. The course of study embraces graded work for four years of seven months each. The total fees for each of the first three years are $115 and $140 for the fourth year. The Dean is Dr. H. C. Tinkham; Secretary, H. L. White, A.M. Total registration of students for 1904-5 was 185; graduates, 48. The fifty-third session begins Dec. 2, 1905, and ends June 27, 1906.

VIRGINIA.

Virginia, population 1,854,184, has three medical colleges, situated in Charlottesville (population 6,449) and Richmond (population 85,050). The clinical facilities in Richmond are good. Board and room can be obtained for $18 a month, and upward, in Charlottesville, and from $12 to $20 a month in Richmond.

Charlottesville.

University of Virginia Department of Medicine.—This school was organized in 1827, and has a faculty of 24. A free dispensary and the new four-story hospital furnish clinical facilities. The requirements for admission are those of the Association of American Medical Colleges. The course is four years of nine months each. Fees: First year, $110; second, $100; third, $80, and $60 for the fourth year. Total enrolment for 1904-5 was 145; graduates, 38. The eighty-first session opens Sept. 14, 1905, and closes June 13, 1906.

Richmond.

Medical College of Virginia.—This school was organized in 1838 as the Medical Department of Hampden Sidney College, Virginia. In 1854 it was granted a charter by the Legislature of Virginia as an independent institution under its present name. In 1860 the college and its appurtenances was deeded to the State of Virginia in consideration of an appropriation on the part of the state of a sufficient sum to build a hospital, since which time it has continued as a state institution. During the war between the states it was the only medical college in the Confederacy which did not close its doors. It held two sessions a year during this period, and a large proportion of the surgeons of the Confederate Army were graduates of this school. Clinical material was formerly furnished by the Old Dominion Hospital, but more recently by the Memorial Hospital, opened in July, 1903, and the City Free Dispensary, both of which are under the exclusive control of this college. An outside obstetric service, the State Penitentiary Hospital, the City Almshouse Hospital and other public charities and asylums of the city afford ample opportunity for additional clinical work. This school is a member of the Southern Medical College Association. The buildings are large and numerous and contain well-equipped laboratories and amphitheaters. The course embraces four years of nearly eight months each. The fees are $85 for each year, with an additional graduation fee of $30. The Dean is Dr. Christopher Tompkins. Total registration for 1904-5 was 209; graduates, 38. The next session begins Sept. 24, 1905, and will end May 16, 1906.

University College of Medicine.—This school was organized in 1893, and has a faculty of 19 professors, 41 lecturers, assistants, etc., a total of 60. Good clinical facilities are furnished by Virginia Hospital, with a maternity [illegible] h was built especially for the purpose o[illegible] n, and is owned and operated by the [illegible] r and Throat Infirmary, containing 34 [illegible] y Jail, State Penitentiary, and a colleg[illegible] is in accord with the rules of the Association of American Medical Colleges, and of the Southern Medical College Association, to both of which this college belongs. The laboratory and lecture-room space and equipment are ample, and some of the instructors devote their entire time to the laboratories. The school lays especial importance on the careful instruction and guidance of each student. The curriculum covers four years of thirty-four weeks each. The total fees are $85 for each year. The President is Dr. Stuart McGuire; the Dean is Dr. Landon B. Edwards, Richmond. Total enrolment for 1904-5 was 223; graduates, 48. The next session begins Sept. 26, 1905, and ends May 24, 1906.

WEST VIRGINIA.

West Virginia, population 958,800, has one medical college, College of Medicine of the West Virginia University, located at Morgantown, a city of 10,000 inhabitants.

Morgantown.

West Virginia University College of Medicine.—This school was organized in 1903, and gives only the first two years of the medical course. Each college term extends over nine months. The degree of M.D. is granted students after they finish the third and fourth years in Baltimore at the College of Physicians and Surgeons. The faculty consists of 5 professors and 4 assistants, 9 in all. The school is a member of the Association of American Medical Colleges. Dr. J. N. Simpson is the Dean and A. J. Collett the Secretary. Total registration in 1904-5 was 36. Next session begins Sept. 21, 1905, and closes June 15, 1906.

WISCONSIN.

Wisconsin, poplation 2,069,042, has two medical colleges, the Milwaukee Medical College and Wisconsin College of Physicians and Surgeons. They are both situated in Milwaukee, a city of 300,000 people. Clinical facilities are furnished them in common by the County Hospital, with 300 beds, and the Milwaukee Hospital for the Insane. Board and lodging can be had for from $3 to $5 a week.

Milwaukee.

Milwaukee Medical College.—This school was organized in 1893, and has a faculty of 36 professors and 27 lecturers, instructors, etc., a total of 63. Good clinical material is furnished by Trinity and the County hospitals, Milwaukee Hospital for the Insane, and a [illegible] This school is a member of the Association of [illegible] lleges. Ample laboratory and amphitheater [illegible] The course covers four years of eight mont[illegible] s are $125 each for the first three years and $135 for the fourth year. The President is Dr. William H. Earles. Total number of students for 1904-5 was 174; graduates, 38. The twelfth session begins Oct. 2, 1905, and will close about June 4, 1906.

Wisconsin College of Physicians and Surgeons.—This college was organized in 1893, and has a faculty composed of 21 professors and 25 associates, assistants, etc., a total of 46. St. Joseph's Hospital, containing 150 beds; the college dispensary, the Milwaukee County Hospital and the Hospital for the Insane supply facilities for clinical study. The school is a member of the Association of American Medical Colleges. The laboratories and lecture rooms are well equipped. The curriculum includes four years of eight months each. Fees: Matriculation, paid once, $5; general ticket, $100; for the use of the microscope, a fee of $2 is charged for each course. The Secretary is Dr. W. H. Washburn. Total enrolment for 1904-5 was 74; graduates, 19. The next session begins Sept. 19, 1905, and ends May 16, 1906.

THE ASSOCIATION OF AMERICAN MEDICAL COLLEGES.

The requirements for admission and graduation to be maintained by colleges holding membership in this association and the minimum course of study prescribed, are as follows:

ARTICLE III.

Section 1.—Every college holding membership in this Association shall demand of each student, under the condition hereinafter stated, as a minimum requirement for admission to the medical course:

(*a*) A bachelor's degree from an approved college or university.

(*b*) A diploma from an accredited high school, normal school or academy requiring for admission evidence of the completion of an eight-year course in primary and intermediate grades, and for graduation not less than four years of study embracing not less than two years (4 points) of foreign language, of which one must be Latin, two years (4 points) of mathematics, two years (4 points) of English, one year (2 points) of history, two years (4 points) of laboratory science, and six years (12 points) of further credit in language, literature, history or science.

(*c*) An examination in the following branches:

A. Required (18 points): Mathematics (4 points); English (4 points); History (2 points); Language (2 must be Latin), 4 points; Science (taken from physics, chemistry, botany, zoology), 4 points.

B. Optional (to 12 points): English, 2 points, History, 6 points; Language, 6 points: Manual Training, 2 points; Mechanical Drawing, 1 point; Natural Science (botany, biology, zoology), 2 points; Physical Science (chemistry, physics), 2 points; Trigonometery, 1 point; Astronomy (1), Civics (1), Geology (1), Physical Geography (1), Physiology and Hygiene (1), Political Economy (1).

(One point in any subject in a high school or academic course demands not less than five periods per week of forty-five minutes each for eighteen weeks).

(*d*) Certificates from reputable instructors recognized by the superintendent hereinafter to be mentioned or by any state board of medical examiners duly authorized by law, may be accepted in lieu of any part of this examination.

Sec 2.—This examination must be conducted by or under the authority of the superintendent of public instruction of the city or state in which the college is located. In no case shall it be conducted by any person connected with the faculty, medical or otherwise, of the institution to which the student is seeking admission.

Sec. 3.—A student may be allowed to enter on his medical work conditioned in not more than six points, and these conditions must be removed by satisfactory examination before he is allowed to enter on the second year of his medical course.

Sec. 4.—Colleges in membership in this Association may honor the official credentials presented by students from other colleges having the standard requirements maintained by members of this Association, excepting for the fourth year of their course, but no member of this Association shall admit a student to advanced standing without first communicating with the college from which such student desires to withd[illegible] the dean of such college a direct written [illegible] to the applicant's professional and mor[illegible] the exact work he has done in said college.

Sec. 5.—Candidates for the degree of Doctor of Medicine shall have attended four courses of study in four calendar years, each annual course to have been of not less than thirty teaching weeks' duration, and at least ten months shall intervene between the beginning of any course and the beginning of the preceding course.

Sec. 6.—Credit may be given to the holder of a Bachelor's Degree from an approved college or university for any work in the medical branches which he has successfully completed in his college course, only so far as it is the full equivalent of corresponding work in the medical curriculum. The holder of such Bachelor's Degree may also be given time credits of not exceeding one year, provided that such student has had at least 40 hours in physics, 144 hours in chemistry, 24 hours in osteology, 292 hours in human or comparative anatomy, 124 hours in histology, 85 hours in embryology, 145 hours in physiology and 46 hours in materia medica; provided that the applicant for such time credits satisfies the professors of the chairs mentioned in the medical school as to his proficiency in these first-year medical studies, and satisfies the examiner, as provided for in Section 2, Article III, that his studies for which the degree was conferred include the above requirements. Such student may be allowed to complete a course for the medical degree in not less than 31 months, provided he completes the remainder of the medical curriculum in that time.

Sec 7.—A college which gives less than a four years' course of study, but does not graduate students, and is possessed of other required qualifications, may be admitted to membership.

Sec. 8.—Each student shall be obliged to attend 80 per cent. of the exercises in every annual course of study for which he seeks credit. No student shall be given credit on examination unless he attains a grade of at least 70 per cent. or its equivalent in any other marking system. And no student shall be graduated unless he shall have attained a passing grade in each and all subjects of the required curriculum.

ARTICLE V.

Section 1.—The entire course of four years shall consist of at least 4,000 hours, divided into the subjects as shown in the following table, and no college shall be recognized that falls below this standard over 20 per cent. in any one branch or over 10 per cent. in the total. Laboratory or clinic hours may be substituted for didactic hours.

CURRICULUM.

	No. of Hours of Lectures.	Hours of Laboratory.	Hours of Clinics.	Total.
Histology	30	60	..	90
Embryology	30	60	..	90
Osteology	30	..	..	30
Anatomy	190	230	..	420
Physiology	180	120	..	300
Chemistry and Toxicology	100	200	..	300
Materia Medica	40	20	..	60
Pharmacology	40	20	..	60
Therapeutics	90	..	..	90
Bacteriology	40	100	..	140
Pathology	100	140	..	240
Medical Zoology, Postmortem Work and Clinical Microscopy	30	60	..	90
Physical Diagnosis	20	..	80	100
Practice of Medicine	180	..	360	540
Surgery	180	..	360	540
Obstetrics	100	..	60	160
Gynecology	50	..	110	160
Pediatrics	40	..	60	100
Eye and Ear	30	..	30	60
Nose and Throat	30	..	30	60
Mental and Nervous Diseases	60	..	60	120
Electro Therapeutics	20	..	40	60
Genito-Urinary Diseases	30	..	30	60
Dermatology and Syphilis	20	..	20	40
Hygiene and Public Health	30	..	..	30
Dietetics	30	..	..	30
Medical Jurisprudence	30	..	..	30
	1,750	1,010	1,240	4,000

The following colleges are members:

College of Medicine University of Southern California, Los Angeles, Cal.; University of California Medical Department, San Francisco, Cal.; Colorado School of Medicine, University of Colorado, Boulder, Colo.; Denver and Gross College of Medicine, Medical Department of the University of Denver, Denver, Colo.; Yale University Department of Medicine (Yale Medical School), New Haven, Conn.; George Washington University Department of Medicine, Washington, D. C.; [illegible] School of Medicine, Washington, D. C.; [illegible] al Department, Washington, D. C.; Amer[illegible] College, Battle Creek, Mich., and Chicago, [illegible] of the University of Illinois (College of Physicians and Surgeons), Chicago, Ill.; Illinois Medical College, Chicago, Ill.; [illegible] rsity Medical School, Chicago, Ill.; Fort Wa[illegible] Ft. Wayne, Ind.; Central College of Physi[illegible] Indianapolis, Ind.; Medical College of India[illegible] napolis, Indianapolis, Ind.; University of [illegible] cine, Bloomington, Ind.; Drake University College of Medicine, Des Moines, Iowa; College of Medicine University of Iowa, Iowa City, Iowa; Keokuk Medical College, College of Physicians and Surgeons, Keokuk, Iowa; Sioux City College of Medicine, Sioux City, Iowa; Kansas Medical College, Medical Departme[illegible] lege, Topeka, Kan.; School of Medicine [illegible] Lawrence, Kan.; Hospital College of Med[illegible] Kentucky School of M[illegible] Kentucky University Medical Department, [illegible] ledical College, Medical Department New [illegible] Orleans, La.; Baltimore Medical College, Baltimore, Md.; College of Physicians and Surgeons, Baltimore, Md.; Johns Hopkins University Medical Department, Baltimore, Md.; University of Maryland School of Medicine, Baltimore, Md.; Woman's Medical College, Baltimore, Md.; College of Physicians and Surgeons, Boston, Mass.; Detroit College of Medicine, Detroit, Mich.; Michigan College of Medicine and Surgery, Detroit, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, Mich.; Hamline University College of Medicine, Minneapolis, Minn.; College of Medicine and Surgery of the University of Minnesota, Minneapolis, Minn.; Medical [illegible] Mississippi Oxford, Miss.; University of [illegible] Medicine, Columbia, Mo.; Kansas City [illegible] City, Mo.; University Medical College, [illegible] Department St. Louis University (Marion-Sims-Beaumont College of Medicine), St. Louis, Mo.; St. Louis College of Physicians and Surgeons, St. Louis, Mo.; Washington [illegible] rtment, St. Louis, Mo.; John A. Creighton [illegible] al Department of Creighton University, [illegible] of Nebraska College of Medicine, Lincoln and Omaha, Neb.; University of Buffalo Medical Department, Buffalo, N. Y.; Syracuse University College of Medicine, Syracuse, N. Y.; University of North Carolina Medical Department, Raleigh, and Chapel Hill, N. C.; Wake Forest College School of Medicine, Wake Forest, N. C.; Medical College of Ohio, Medical Department University of Cincinnati, Cincinnati, Ohio; Miami Medical College, Cincinnati, Ohio; Cleveland College of Phy[illegible] Medic[illegible] Univer[illegible] Weste[illegible] l Colle[illegible] Ohio [illegible] Ohio; [illegible] lege, [illegible] College, Toledo, Ohio; University of Oregon Medical Department, Port[illegible] University Medical Department, Salem, Ore[illegible] College of Philadelphia, Philadelphia, Pa.; [illegible] lege of Pennsylvania, Philadelphia, Pa.; [illegible] Medical College, Medical Department Wester[illegible] sylvania, Pittsburg, Pa.; Meharry Medical College, Medical Department Walden University, Nashville, Tenn.; University College of Medicine, Richmond, Va.; University of West Virgina Medical Department, Morgantown, W. Va.; Milwaukee Medical College, Milwaukee, Wis.; Wisconsin College of Physicians and Surgeons, Milwaukee, Wis.

The secretary-treasurer of the Association is Dr. Fred C. Zapffe, 1764 Lexington St., Chicago.

SOUTHERN MEDICAL COLLEGE ASSOCIATION.

The following requirements for admission to the freshman year are exacted by the colleges belonging to this Association:

Section 3. He must possess a diploma of graduation from some literary or scientific institution of learning, or a certificate that he has passed the entrance examination to a university, or a certificate from some legally constituted high school [general superintendent of state education, or [illegible] e county board of public education, attesting [illegible] larly examined and is possessed of at lea[illegible] ainments required of first-grade teachers of [illegible] ninimum preliminary education required by [illegible] College Association shall be, after Jan. 1, 1906, a grammar school education and two years' successful attendance at a recognized preparatory school or a high school, or its equivalent, said equivalent to be determined by a superintendent of public instruction. A student may be given one month from date of his admission to submit his certificate of qualification. And if he fails to possess the requisite educational qualifications in one or more branches, he may matriculate and attend his first course of lectures, but must present the requisite certificate before matriculating in the second course, and all tickets or certificates issued in such cases must have the conditions printed plainly on the face of each. (After Jan. 1, 1906, that part in brackets becomes non-operative.)

The following colleges are members:

Medical Department University of Tennessee, Nashville, Tenn.; Medical Department University of Nashv[illegible] Medical Department University of the S[illegible] Medical Department Vanderbilt University, [illegible] ical Department Fort Worth University, Fo[illegible] ical College of Virginia, Richmond, Va.; Ten[illegible] Knoxville, Tenn.; Medical College of Alabama, Mobile, Ala; Birmingham Medical College, Birmingham, Ala.; University College of Medicine, Richmond, Va.; Medical Department Baylor University, Dallas, Texas; Medical [illegible] ity of Mississippi, Oxford, Miss.; Memphis [illegible] lege, Memphis, Tenn.; Chattanooga Medical [illegible] Tenn.

The secretary-treasurer is Dr. G. C. Savage, Nashville, Tenn.

AMERICAN INSTITUTE OF HOMEOPATHY.

The minimum requirements for entrance into the freshman class of all homeopathic medical colleges, as adopted in 1901, are, with abbreviation, as follows:

1. English Composition. Exercise on assigned theme, not less than 200 words. Exercise in reading. Exercise in correction of ungrammatical sentences.
2. Mathematics. Arithmetical exercises in (a) vulgar fractions; (b) decimals; (c) percentage; (d) proportion; (e) square and cube root; (f) weights and measures; (g) decimal system. Mensuration. (a) Definition of terms; (b) exercises under the more fundamental rules.
3. Geography (general facts about North America).
4. History. General, with particular reference to human

(Continued on page 570.)

tion is given in the City Hospital, St. Paul Sanitarium and the college dispensary. The fees for the first three years are $80, and $105 for the fourth year. The Dean is Dr. A. C. Bell. Total registration for 1904-5 was 108; graduates, 17. The next session begins Oct. 3, 1905, and closes April 3, 1906.

Physio-Medical College of Texas.—This college was organized in 1902. It has a faculty of 24 professors and 4 assistants, total 28. The course is four years of thirty weeks each. The fees are, first year, $70; fourth year, $85; other years, $65. Enrolment 1904-5 was 42; graduates, 5. The Secretary is Dr. R. L. Spann. The next session opens Oct. 15, 1905, and closes May 15, 1906.

Texarkana.

Gate City Medical College.—The length of each course is seven months. The faculty numbers 20 professors and assistants. Registration 1904-5 was 109; graduates, 26. The Dean is Dr. J. W. Decker. The next session begins Oct. 26, 1905, and ends May 4, 1906.

VERMONT.

Vermont, population 343,641, has one medical school, located at Burlington, a town of about 20,000 people. Board and room costs from $3.50 to $5 a week.

Burlington.

University of Vermont College of Medicine.—This school was organized in 1822, but suspended from 1836 until 1854, when it was reorganized. The faculty consists of 20 professors and 21 assistants, instructors, etc., in all 41. The Mary Fletcher Hospital and a free dispensary furnish material for clinical instruction. Applicants for admission must be graduates of a four-year high school course or take an examination to show equivalent educational qualifications. The laboratory and lecture-room space and equipment are good. A new and commodious college building is nearly completed. The course of study embraces graded work for four years of seven months each. The total fees for each of the first three years are $115 and $140 for the fourth year. The Dean is Dr. H. C. Tinkham; Secretary, H. L. White, A.M. Total registration of students for 1904-5 was 185; graduates, 48. The fifty-third session begins Dec. 2, 1905, and ends June 27, 1906.

VIRGINIA.

Virginia, population 1,854,184, has three medical colleges, *situated in Charlottesville (population 6,449) and* Richmond (population 85,050). The clinical facilities in Richmond are good. Board and room can be obtained for $18 a month, and upward, in Charlottesville, and from $12 to $20 a month in *Richmond.*

Charlottesville.

University of Virginia Department of Medicine.—This school was organized in 1827, and has a faculty of 24. A free dispensary and the new four-story hospital furnish clinical facilities. The requirements for admission are those of the Association of American Medical Colleges. The course is four years of nine months each. Fees: First year, $110; second, $100; third, $80, and $60 for the fourth year. Total enrolment for 1904-5 was 145; graduates, 38. The eighty-first session opens Sept. 14, 1905, and closes June 13, 1906.

Richmond.

Medical College of Virginia.—This school was organized in 1838 as the Medical Department of Hampden Sidney College, Virginia. In 1854 it was granted a charter by the Legislature of *Virginia as an independent institution under its present name.* In 1860 the college and its appurtenances was deeded to the State of Virginia in consideration of an appropriation on the part of the *state of a sufficient* sum to build a hospital, since which time it has continued as a state institution. During the war between the states it was the only medical college in the Confederacy which did not close its doors. It held two sessions a year during this period, and a large proportion of the surgeons of the Confederate Arm [illegible] is school. Clinical material was *formerly* [illegible] Dominion Hospital, but more recently by [illegible] opened in July, 1903, and the City Free Dispensary, both of which are under the exclusive control of this college. An outside obstetric service, the State Penitentiary Hospital, the City Almshouse Hospital and other public charities and asylums of the city afford ample opportunity for additional clinical work. This school is a member of the Southern Medical College Association. The buildings are large and numerous and contain well-equipped laboratories and amphitheaters. The course embraces four years of nearly eight months each. The fees are $85 for each year, with an additional graduation fee of $30. The Dean is Dr. Christopher Tompkins. Total registration for 1904-5 was 209; graduates, 38. The next session begins Sept. 24, 1905, and will end May 16, 1906.

University College of Medicine.—This school was organized in 1893, and has a faculty of 19 professors, 41 lecturers, assistants, etc., a total of 60. Good clinical facilities are furnished by Virginia Hospital, with a maternity department and annex, which was built especially for the purpose of affording bedside instruction, and is owned and operated by the college: Richmond Eye, Ear and Throat Infirmary, containing 34 beds; the City Hospital, City Jail, State Penitentiary, and a college dispensary. Matriculation is in accord with the rules of the Association of American Medical Col*leges, and of* the Southern Medical College Association, to both of which this college belongs. The laboratory and lecture-room space and equipment are ample, and some of the instructors devote their entire time to the laboratories. The school lays especial importance on the careful instruction and guidance of each student. The curriculum covers four years of thirty-four weeks each. The total fees are $85 *for each year. The President* is Dr. Stuart McGuire; the Dean is Dr. Landon B. Edwards, Richmond. Total enrolment for 1904-5 was 223; graduates, 48. The next session begins Sept. 26, 1905, and ends May 24, 1906.

WEST VIRGINIA.

West Virginia, population 958,800, has one medical college, College of Medicine of the West Virginia University, located at Morgantown, a city of 10,000 inhabitants.

Morgantown.

West Virginia University College of Medicine.—This school was organized in 1903, and gives only the first two years of the medical course. Each college term extends over nine months. The degree of M.D. is granted students after they finish the third and fourth years in Baltimore at the College of Physicians and Surgeons. The faculty consists of 5 professors and 4 assistants, 9 in all. The school is a member of the Association of American Medical Colleges. Dr. J. N. Simpson *is the Dean and A. J. Collett* the Secretary. Total registration in 1904-5 was 36. Next session begins Sept. 21, 1905, and closes June 15, 1906.

WISCONSIN.

Wisconsin, poplation 2,069,042, has two medical colleges, the Milwaukee Medical College and Wisconsin College of Physicians and Surgeons. They are both situated in Milwaukee, a city of 300,000 people. Clinical facilities are furnished them in common by the County Hospital, with 300 beds, and the Milwaukee Hospital for the Insane. Board and lodging can be had for from $3 to $5 a week.

Milwaukee.

Milwaukee Medical College.—This school was organized in 1893, and has a faculty of 36 professors and 27 lecturers, instructors, etc., a total of 63. Good clinical material is furnished by Trinity and the County hospitals, Milwaukee Hospital for the Insane, and a college dispensary. This school is a member of the Association of American Medical Colleges. Ample laboratory and amphitheater facilities are afforded. The course covers four years of eight months each. The total fees are $125 each for the first three years and $135 for the fourth year. The President is Dr. William H. Earles. Total number of students for 1904-5 was 174; graduates, 38. The twelfth session begins Oct. 2, 1905, and will close about June 4, 1906.

Wisconsin College *of Physicians* and Surgeons.—This college was organized in 1893, and has a faculty composed of 21 professors and 25 associates, assistants, etc., a total of 46. St. Joseph's Hospital, *containing* 150 beds; the college dispensary, the Milwaukee County Hospital and the Hospital for the Insane supply facilities for clinical study. The school is a member of the Association of American Medical Colleges. The laboratories and lecture rooms are well equipped. The curriculum includes four years of eight months each. Fees: [illegible] e, $5; general ticket, $100; for the use of [illegible] $2 is charged for each course. The Secretary [illegible] Total enrolment for 1904-5 was 74; grad [illegible] ession begins Sept. 19, 1905, and ends May 16, 1906.

THE ASSOCIATION OF AMERICAN MEDICAL COLLEGES.

The requirements for admission and graduation to be maintained by colleges holding membership in this association and the minimum course of study prescribed, are as follows:

ARTICLE III.

Section 1.—Every college holding membership in this Association shall demand of each student, under the condition hereinafter stated, as a minimum requirement for admission to the medical course:

(*a*) A bachelor's degree from an approved college or university.

(*b*) A *diploma from an accredited high school, normal school* or academy requiring for admission evidence of the completion of an eight-year course in primary and intermediate grades, *and for* graduation not less than four years of study embracing not less *than two years (4 points) of foreign language, of which one must* be Latin, two years (4 points) of mathematics, two years (4 points) *of* English, *one year (2 points) of history, two years (4* points) of laboratory science, and six years (12 points) of further credit in language, literature, history or science.

(*c*) An examination in the following branches:

A. Required (18 points): Mathematics (4 points); English (4 points); History (2 points); Language (2 must be Latin), 4 points; Science (taken from physics, chemistry, botany, zoology), 4 points.

B. Optional (to 12 points): English, 2 points, History, 6 points; Language, 6 points: Manual Training, 2 points; Mechanical Drawing, 1 point; Natural Science (botany, *biology, zoology*), 2 points; Physical Science (chemistry, physics), 2 points; Trigonometery, 1 point; *Astronomy* (1), Civics (1), Geology (1), Physical Geography. (1), Physiology and Hygiene (1), Political Economy (1).

(*One point in any* subject in a high school or academic course demands not less than five periods per week of forty-five minutes each *for eighteen* weeks).

(*d*) Certificates from reputable instructors recognized by the [illegible] ter to be mentioned or by any state board [illegible] uly authorized by law, may be accepted in [illegible] examination.

Sec 2.—This examination must be conducted by or under the authority of the superintendent of public instruction of the city or state in which the college is located. In no case shall it be conducted by any person connected with the faculty, medical or otherwise, of the institution to which the student is seeking admission.

Sec. 3.—A student may be allowed to enter on his medical work conditioned in not more than six points, and these conditions must be removed by satisfactory examination before he is allowed to enter on the second year of his medical course.

Sec. 4.—Colleges in membership in this Association may honor the official credentials presented by students from other colleges having the standard requirements maintained by members of this Association, excepting for the fourth year of their course, but no member of this Association shall admit a student to advanced standing without first communicating with the college from which such student desires to withd[illegible] the dean of such college a direct written [illegible] to the applicant's professional and mor[illegible] the exact work he has done in said college.

Sec. 5.—Candidates for the degree of Doctor of Medicine shall have attended four courses of study in four calendar years, each annual course to have been of not less than thirty teaching weeks' duration, and at least ten months shall [illegible] beginning of any course and the beginnin[illegible] urse.

Sec. 6.—Credit may be given to the [illegible]. Degree from an approved college or university for any work in the medical branches which he has successfully completed in his college course, only so far as it is the full equivalent of corresponding work in the medical curriculum. The holder of such Bachelor's Degree may also be given time credits of not exceeding one year, provided that such student has had at least 40 hours in physics, 144 hours in chemistry, 24 hours in osteology, 292 hours in human or comparative anatomy, 124 hours in histology, 85 hours in embryology, 145 hours in physiology and 46 hours in materia medica; provided that the applicant for such time credits satisfies the professors of the chairs mentioned in the medical school as to his proficiency in these first-year medical studies, and satisfies the examiner, as provided for in Section 2, Article III, that his studies for which the degree was conferred include the above requirements. Such student may be allowed to complete a course for the medical degree in not less than 31 months, provided he completes the remainder of the medical curriculum in that time.

Sec 7.—A college which gives less than a four years' course of study, but does not graduate students, and is possessed of other required qualifications, may be admitted to membership.

Sec. 8.—Each student shall be obliged to attend 80 per cent. of the exercises in every annual course of study for which he seeks credit. No student shall be given credit on examination unless he attains a grade of at least 70 per cent. or its equivalent in any other marking system. And no student shall be graduated unless he shall have attained a passing grade in each and all subjects of the required curriculum.

ARTICLE V.

Section 1.—The entire course of four years shall consist of at least 4,000 hours, divided into the subjects as shown in the following table, and no college shall be recognized that falls below this standard over 20 per cent. in any one branch or over 10 per cent. in the total. Laboratory or clinic hours may be substituted for didactic hours.

CURRICULUM.

	No. of Hours of Lectures.	Hours of Laboratory.	Hours of Clinics.	Total.
Histology	30	60	..	90
Embryology	30	60	..	90
Osteology	30	..	..	30
Anatomy	190	230	..	420
Physiology	180	120	..	300
Chemistry and Toxicology	100	200	..	300
Materia Medica	40	20	..	60
Pharmacology	40	20	..	60
Therapeutics	90	..	..	90
Bacteriology	40	100	..	140
Pathology	100	140	..	240
Medical Zoology, Postmortem Work and Clinical Microscopy	30	60	..	90
Physical Diagnosis	20	..	80	100
Practice of Medicine	180	..	360	540
Surgery	180	..	360	540
Obstetrics	100	..	60	160
Gynecology	50	..	110	160
Pediatrics	40	..	60	100
Eye and Ear	30	..	30	60
Nose and Throat	30	..	30	60
Mental and Nervous Diseases	60	..	60	120
Electro Therapeutics	20	..	40	60
Genito-Urinary Diseases	30	..	30	60
Dermatology and Syphilis	20	..	20	40
Hygiene and Public Health	30	..	..	30
Dietetics	30	..	..	30
Medical Jurisprudence	30	..	..	30
	1,750	1,010	1,240	4,000

The following colleges are members:

College of Medicine University of Southern California, Los Angeles, Cal.; University of California Medical Department, San Francisco, Cal.; [illegible] Medicine, University of Colorado, Bould[illegible] ss College of Medicine, Medical Departm[illegible] Denver, Denver, Colo.; Yale University [illegible] (Yale Medical School), New Haven, Con[illegible] icine, Wash[illegible] cine, Washington, D. C.: Howa[illegible] Washington, D. C.: American [illegible] Creek, Mich., and Chicago, Ill.: [illegible] the University of Illinois (College of Phys[illegible] Chicago, Ill.: Illinois Medical College, Chica[illegible] University Medical School, Chicago, Ill.; F[illegible] Medicine, Ft. Wayne, Ind.; Central College of Physician[illegible] apolis, Ind.: Medical College of Indiana, [illegible] olis, Indianapolis, Ind.: University of Indi[illegible] Bloomington, Ind.: Drake University College of Medicine, Des Moines, Iowa; College of Medicine University of Iowa, Iowa City, Iowa; Keokuk Medical College, College of Physicians and Surgeons, Keokuk, Iowa; Sioux City College of Medicine, Sioux City, Iowa; Kansas Medical College, Medical [illegible] e, College, Topeka, Kan.: School of [illegible] ansas, Lawrence [illegible] leg[illegible] Ky.; Kentucky [illegible] ouisville, Ky.: Kentucky University Medical [illegible] Ky.; Flint Medical College, Medical Department New Orleans University, New Orleans, La.; Baltimore Medical College, Baltimore, Md.; College of Physicians and Surgeons, Baltimore, Md.; Johns Hopkins University Medical De[illegible] Md.; University of Maryland School of Med[illegible]; Woman's Medical College, Baltimore, Md.; [illegible] and Surgeons, Boston, Mass.; Detroit College of Medicine, Detroit, Mich.; Michigan College of Medicine and Surgery, Detroit, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, Mich.; Hamline University College of Medicine, Minneapolis, Minn.; College of Medicine and Surgery of the University of Minnesota, Minneapolis, Minn.; Medical Department University of Mississippi Oxford, Miss.; University of Missouri Department of Medicine, Columbia, Mo.; Kansas City Medical College, Kansas City, Mo.; University Medical College, Kansas City, Mo.; Medical Department St. Louis University (Mar[illegible]), St. Louis, Mo.; St. Louis [illegible] St. Louis, Mo.; Washington [illegible] is, Mo.; John A. Creighton [illegible] of Creighton University, [illegible] College of Medicine, Lincoln and Omaha, Neb.; University of Buffalo Medical Department, Buffalo, N. Y.; Syracuse University College of Medicine, Syracuse, N. Y.; University of North Carolina Medical Department, Raleigh, and Chapel Hill, N. C.; Wake Forest College School of Medicine, Wake Forest, N. C.; Medical College of Ohio, Medical Department University of Cincinnati, Cincinnati, Ohio; Miami Medical College, Cincin[illegible] of Phy[illegible] Medic[illegible] Univer[illegible] Weste[illegible] l Colle[illegible] Ohio [illegible] Ohio; [illegible] lege, [illegible] College, Toledo, Ohio; University of Oregon M[illegible] nd, Ore.; Willamette [illegible]; Medico-Chirurgical [illegible] Woman's Medical Col[illegible] Western Pennsylvania [illegible] University of Penn[illegible] llege, Medical Department Walden Univer[illegible] University College of Medicine, Richmond, [illegible] Virgina Medical Department, Morganto[illegible] Medical College, Milwaukee, Wis.; Wisconsin College of Physicians and Surgeons, Milwaukee, Wis.

The secretary-treasurer of the Association is Dr. Fred C. Zapffe, 1764 Lexington St., Chicago.

SOUTHERN MEDICAL COLLEGE ASSOCIATION.

The following requirements for admission to the freshman year are exacted by the colleges belonging to this Association:

Section 3.. He must possess a diploma of graduation from some literary or scientific institut[illegible] ate that he has passed the entrance [illegible] or a certificate from some legally [illegible] eral superintendent of state educat[illegible] e county board of public education, a[illegible] larly examined and is possessed of [illegible] ainments required of first-grade teach[illegible] minimum preliminary education requi[illegible] College Association shall be, after Jan. 1, 1906, a grammar school education and two years' successful attendance at a recognized preparatory school or a high school, or its equivalent, said equivalent to be determined by a superintendent of public instruction. A student may be given one month from date of his admission to submit his certificate of qualification. And if he fails to possess the requisite educational qualifications in one or more branches, he may matriculate and attend his first course of lectures, but must present the requisite certificate before matriculating in the second course, and all tickets or certificates issued in such cases must have the conditions printed plainly on the face of each. (After Jan. 1, 1906, that part in brackets becomes non-operative.)

The following colleges are members:

Medical Department Univer[illegible] hville, Tenn.; Medical Department Univers[illegible] ville, Tenn.; Medical Department Univers[illegible] anee, Tenn.; Medical Department Vanderbi[illegible] Tenn.; Medical Department Fort Worth [illegible], Texas; Medical [illegible] ichmond, Va.; Tennessee Medical College, Kno[illegible] College of Alabama, Mobile, Ala; Birming[illegible] Birmingham, Ala.; University College of Medi[illegible], Medical Department Baylor University, Dallas, Texas; Medical Department, University of Mississippi, Oxford, Miss.; Memphis Hospital Medical College, Memphis, Tenn.; Chattanooga Medical College, Chattanooga, Tenn.

The secretary-treasurer is Dr. G. C. Savage, Nashville, Tenn.

AMERICAN INSTITUTE OF HOMEOPATHY.

The minimum requirements for entrance into the freshman class of all homeopathic medical colleges, as adopted in 1901, are, with abbreviation, as follows:

1. English Composition. Exercise on assigned theme, not less than 200 words. Exercise in reading. Exercise in correction of ungrammatical sentences.

2. Mathematics. Arithmetical exercises in (a) vulgar fractions; (b) decimals; (c) percentage; (d) proportion; (e) square and cube root; (f) weights and measures; (g) decimal system. Mensuration. (a) Definition of terms; (b) exercises under the more fundamental rules.

3. Geography (general facts about North America).

4. History. General, with particular reference to human

(*Continued on page 570.*)

Name of College.	Estimated population of city in which college is located.	No. of students registered session 1904-1905. Men	No. of students registered session 1904-1905. Women	Graduates 1905. Men	Graduates 1905. Women	Total number of teachers.	Number of weeks in college year.	Total graduates all colleges in state, 1905.	Total students in all colleges in state, 1904-5.
ALABAMA								47	245
Birmingham Medical College.—R	38,000	75	...	16	...	29	24	...	....
Medical College of Alabama.—R	"	170	...	31	...	20	25	...	....
ARKANSAS								28	220
Medical Department Arkansas University.—R	60,000	217	3	26	2	35	24		
CALIFORNIA.								129	629
Cooper Medical College.—R	400,000	134	21	33	4	61	34	...	....
Medical Department University of California.—R	"	93	11	15	2	59	36	...	....
California Medical College.—E	"	31	9	5	3	26	26	...	....
Hahnemann Medical College of the Pacific.—H	"	26	8	2	7	44	30	...	....
College of Physicians and [illegible]—R	"	124	20	28	1	41	30	...	....
Oakland College of Medicir[illegible]	100,000	10	2	...	...	28	36	...	....
College of Medicine, Unive[illegible]—R	102,479	105	10	22	1	48	34	...	....
College of Physicians and [illegible]	"	23	2	6	...	30	31	...	....
COLORADO.								43	198
Denver and Gross College of Medicine.—R	175,000	108	7	29	2	81	32	...	....
Denver Homeopathic College.—H	"	20	9	5	1	33	27	...	....
Colorado School of Medicine.—R	6,150	48	6	6	...	27	36	...	....
CONNECTICUT								22	138
Yale University Medical Department.—R	115,000	138	...	22	...	48	36		
DISTRICT OF COLUMBIA.								115	584
George Washington University, Department of Medicine.—R.	278,718	298	...	62	...	64	34	...	.....
Georgetown University School of Medicine.—R	"	133	...	32	...	53	35	...	....
Howard University, Medical Department.—R	"	137	16	20	1	33	34	...	....
GEORGIA								76	411
Atlanta College of Physicians and Surgeons.—R	89,872	250	...	48	...	43	24	...	....
Georgia College of Eclectic Medicine and Surgery.—E	"	52	1	14	...	16	24	...	....
Medical College of Georgia.—R	39,441	108	...	14	...	25	24	...	....
ILLINOIS								786	3,481
American Medical Missionary College.—R	1,900,000	58	22	14	7	26	36	...	....
Bennett College of Eclectic Medicine and Surgery.—E	"	99	4	29	1	56	28	...	....
College of Medicine and Surgery—P.M.	"	42	8	12	...	62	36	...	....
College of Physicians and Surgeons, Chicago.—R	"	602	52	201	12	144	36	...	....
Hahnemann Medical College and Hospital.—H	"	220	...	61	...	104	28	...	....
Harvey Medical College.—R	"	180	30	10	6	73	39	...	....
Hering Medical College.—H	"	36	14	10	4	61	30	...	....
Illinois Medical College.—R	"	181	11	55	4	51	27	...	....
[illegible]	"	96	6	12	1	38	38	...	....
[illegible] chool.—R	"	593	...	143	...	157	36	...	....
[illegible]	"	498	24	106	6	234	34	...	....
[illegible]	"	232	...	29	...	66	36	...	....
[illegible] l Surgery.—R	"	292	...	34	...	65	30	...	....
[illegible]—R	"	173	8	27	2	39	39	...	....
INDIANA.								120	539
Central College of Physicians and Surgeons.—R	160,164	141	5	25	...	59	30	...	....
Medical College of Indiana.—R	"	262	7	78	...	63	34	...	....
Physio-Medical College of Indiana.—Ph. M	"	19	3	5	...	30	28	...	....
Eclectic Medical College of Indiana.—E	"	45	...	8	...	24	29	...	....
Fort Wayne College of Medicine.—R	45,115	40	3	11	2	36	30	...	....
Indiana University School of Medicine.—R	7,000	14	...	...	...	11	36	...	....
IOWA.								150	680
Drake University College of Medicine.—R	91,515	56	4	10	2	46	31	...	....
Keokuk Medical College of Physicians and Surgeons.—R	14,641	219	11	49	1	17	32	...	....
Sioux City College of Medicine.—R	33,111	53	19	11	3	26	32	...	....
State University of Iowa, Homeopathic Medical Dept.—H	7,879	41	...	9	...	24	36	...	....
State University of Iowa, Medical Department.—R	"	249	28	62	3	50	36	...	....
KANSAS								26	178
College [illegible] geons of Kansas City.—R	55,000	48	7	1	2	45	28	...	....
Kansas [illegible]	33,608	87	4	16	7	33	38	...	....
School c[illegible] of Kansas.—R	10,862	31	1	...	...	18	36	...	....
KENTUCKY								345	1,525
Hospital College of Medicine.—R	225,000	425	0	93	0	51	30	...	....
Kentucky School of Medicine.—R	"	190	3	48	1	47	30	...	....
Louisville Medical College.—R	"	263	...	40	...	26	30	...	....
Louisville National Medical College.—R	"	34	3	5	1	25	30	...	....
[illegible] pathic Medical College.—H	"	16	3	6	...	27	26	...	....
[illegible] University of Louisville.—R	"	241	7	71	4	38	30	...	....
[illegible] Medical Department.—R	"	340	...	76	...	42	30	...	....
LOUISIANA								90	524
Flint Medical College of New Orleans University.—R	287,104	53	2	7	...	11	24	...	....
Tulane University, Medical Department.—R	"	469	...	83	...	49	30	...	....
MAINE								18	93
Medical School of Maine, Bowdoin College.—R	50,000	93	...	18	...	33	33	...	....
MARYLAND								420	1,681
Baltimore Medical College.—R	508,951	406	...	96	...	59	33	...	....
Baltimore University School of Medicine.—R	"	70	...	14	...	25	30	...	....
College of Physicians and Surgeons of Baltimore.—R	"	298	...	70	...	53	32	...	....
Medical Department Johns Hopkins University.—R	"	269	22	48	5	82	36	...	....
Southern Homeopathic Medical College.—H	"	28	5	7	2	24	30	...	....
University of Maryland, School of Medicine.—R	"	340	...	83	...	60	32	...	....
Woman's Medical College of Baltimore.—R	"	0	36	0	2	33	32	...	....
[illegible] College.—R	"	207	...	93	...	44	28	...	....
[illegible]								171	943
[illegible] School of Medicine.—H	603,163	63	20	12	2	59	33	...	....
College of Physicians and Surgeons.—R	"	149	19	27	1	39	34	...	....
Harvard University Medical School.—R	"	307	0	67	0	145	36	...	....
Tufts College Medical School.—R	"	331	54	62	...	88	32	...	....
MICHIGAN								170	822
Detroit College of Medicine.—R	300,000	208	...	54	...	92	30	...	....
Detroit Homeopathic Medical College.—H	"	36	8	10	2	37	32	...	....
Michigan College of Medicine and Surgery.—R	"	74	4	25	1	57	32	...	....
Grand Rapids Medical College.—R	87,565	48	2	5	...	33	29	...	....
University of Michigan, Dept. of Medicine and Surgery.—R	14,509	348	28	58	3	56	34	...	....
University of Michigan, Homeopathic Medical College.—H	"	53	13	7	5	49	31	...	....
MINNESOTA								85	367
College of Homeopathic Med. and Surg., Univ of Minn.—H	225,000	15	1	4	...	33	34	...	....
College of Medicine and Surgery, Univ. of Minnesota.—R	"	219	9	71	...	104	34	...	....
Medical Department of Hamline University.—R	"	118	5	9	1	45	34	...	....
MISSISSIPPI								.....	18
Medical Department University of Mississippi, Oxford.—R	2,000	17	1	...	...	14	34	...	....

Name of College.	Estimated population of city in which college is located.	No. of students registered session of 1904-5. Men	Women	Graduates. 1905. Men	Women	Total number of teachers.	Number of weeks in college year.	Total graduates all colleges in state, 1905.	Total students in all colleges in state, 1904-5.
MISSOURI								508	2,182
[illegible]	163,752	38	...	16	...	54	30	...	....
isas City.—R.	“	220	...	58	...	77	31	...	....
College.—H.	“	23	9	4	6	43	28	...	....
[illegible]	“	116	...	34	...	51	28	...	....
[illegible]	“	55	1	16	1	25	30	...	....
Central Medical College.—R.	105,000	65	5	14	3	28	28	...	....
Ensworth Medical College.—R.	“	90	...	22	...	32	29	...	....
Barnes Medical College.—R.	575,238	391	36	98	11	60	32	...	....
Medical Department St. Louis University (Marion-Sims Beaumont College of Medicine).—R.	“	385	...	103	...	105	33	...	....
St. Louis College of Physicians and Surgeons.—R.	“	275	...	29	...	39	28	...	....
American Medical College.—E.	“	62	4	16	0	17	26	...	....
Homeopathic Medical College of Missouri.—H.	“	40	5	5	2	38	28	...	....
Medical Department Washington University.—R.	“	254	...	62	...	114	32	...	....
University of State of Missouri.—R.	5,651	101	7	7	1	30	34	...	....
NEBRASKA								76	340
University of Nebraska College of Medicine.—R.	102,555	87	5	27	1	60	30	...	....
John A. Creighton Medical College.—R.	“	164	3	31	2	49	33	...	....
Lincoln Medical College of Cotner University.—E.	40,169	75	6	14	1	36	29	...	....
NEW HAMPSHIRE								12	60
Dartmouth Medical College.—R.	1,884	60	...	12	...	20	32	...	....
NEW YORK								542	2,565
Albany Medical College.—R.	100,000	172	...	52	...	72	30	...	....
College of Physicians and Surgeons.—R.	3,437,202	568	...	185	...	128	34	...	....
Cornell University Medical College.—R.	“	360	32	66	8	211	34	...	....
Eclectic Medical College.—E.	“	85	14	13	...	34	28	...	....
Long Island College Hospital.—R.	“	414	...	73	...	95	32	...	....
New York Homeopathic Medical College and Hospital.—H.	“	110	...	21	...	78	26	...	....
New York Medical College and Hospital for Women.—H.	“	...	34	...	9	43	29	...	....
University and Bellevue Hospital Medical College.—R.	“	391	...	47	...	103	33	...	....
*Medical Department Fordham College New York.—R.	“	....	....	....	....	....	....	....	....
Syracuse University College of Medicine.—R.	108,374	147	7	31	...	54	36	...	....
University of Buffalo, Medical Department.—R.	352,387	218	13	37	...	82	33	...	....
NORTH CAROLINA								56	335
Leonard Medical School.—R.	13,643	136	...	21	...	10	27	...	....
Wake Forest School of Medicine.—R.	823	18	...	...	...	10	34	...	....
North Carolina Medical College.—R.	904	81	...	26	...	21	30	...	....
Medical Department University of North Carolina.—R.	13,643	100	...	9	...	31	35	...	....
OHIO								230	878
Western Reserve University Medical College.—R.	381,768	73	...	19	...	54	34	...	....
Cleveland College of Physicians and Surgeons.—R.	“	75	9	16	...	59	32	...	....
Cleveland Homeopathic Medical College.—H.	“	61	5	23	1	63	31	...	....
Eclectic Medical Institute.—E.	325,902	131	4	35	2	221	28	...	....
Medical College of Ohio.—R.	“	120	1	33	...	76	33	...	....
Pulte Medical College.—H.	“	13	5	5	...	38	31	...	....
Miami Medical College.—R.	“	82	3	21	1	58	32	...	....
Ohio Me	125,560	152	6	37	0	35	32	...	....
Starling	“	105	...	30	...	36	32	...	....
Toledo M	131,822	22	1	7	0	36	30	...	....
OKLAHOMA								....	15
University of Oklahoma, Norman.—R.	3,682	8	...	...	...	8	34	...	....
Epworth University College of Medicine, Oklahoma City.—R.	35,000	6	1	...	...	27	27	...	....
OREGON								33	152
University of Oregon, Medical Department.—R.	125,000	90	12	24	2	28	28	...	....
Medical Department Willamette University.—R.	10,000	50	...	7	...	19	24	...	....
PENNSYLVANIA								522	2,366
Temple College of Philadelphia, Department of Medicine.—R.	1,293,697	87	...	2	...	40	38	...	....
University of Pennsylvania, Department of Medicine.—R.	“	546	...	116	...	137	36	...	....
Hahnemann Medical College and Hospital.—H.	“	164	...	44	...	73	32	...	....
ege.—R.	“	676	...	179	...	111	34	...	....
ege of Pennsylvania.—R.	“	...	151	...	42	48	32	...	....
llege of Philadelphia.—R.	“	461	...	86	...	80	34	...	....
Medical College.—R.	321,616	274	7	52	1	94	34	...	....
PHILIPPINE ISLANDS								14	68
San Tomaso University, Manila.—R.	150,000	68	...	14	...	81	36	...	....
SOUTH CAROLINA								28	87
Medical College of State of South Carolina.—R.	55,807	85	2	28	...	20	27	...	....
TENNESSEE								364	2,015
Tennessee Medical College.—R.	32,637	92	...	13	...	29	26	...	....
Knoxville Medical College.—R.	“	36	11	4	2	12	26	...	....
iversity of Nashville.—R.	80,865	317	...	75	...	23	24	...	....
lical Department.—R.	“	158	...	35	...	35	28	...	....
ledical Department.—R.	“	164	...	44	...	73	32	...	....
-R.	“	328	...	57	2	22	28	...	....
College.—R.	102,320	476	...	51	...	28	28	...	....
edical Department.—R.	1,200	132	...	36	...	22	25	...	....
Chattanooga Medical College.—R.	30,154	264	4	38	1	30	28	...	....
University of West Tennessee Medical Department.—R.	15,000	33	...	6	...	12	24	...	....
TEXAS								139	762
Medical Department Fort Worth University.—R.	35,000	190	1	21	...	32	26	...	....
University of Texas, Department of Medicine.—R.	37,789	163	5	23	...	27	34	...	....
Baylor University College of Medicine.—R.	55,000	129	3	34	2	35	25	...	....
Physio-Medical College of Texas.—Ph.M.	“	36	6	5	...	28	28	...	....
ledical College, Dallas.—R.	55,000	46	2	14	...	37	30	...	....
Surgeons, Dallas.—R.	“	67	5	13	1	20	24	...	....
Texarkana.—R.	5,000	109	...	26	...	20	30	...	....
VERMONT								48	185
University of Vermont College of Medicine.—R.	20,000	185	...	48	...	41	26	...	....
VIRGINIA								127	577
Medical College of Virginia.—R.	85,050	209	...	38	...	43	30	...	....
University College of Medicine.—R.	“	223	...	48	...	60	32	...	....
University of Virginia Department of Medicine.—R.	6,449	145	...	41	...	21	34	...	....
WEST VIRGINIA								....	36
University of West Virginia, Morgantown.—R.	2,100	36	...	...	...	9	36	...	....
WISCONSIN								57	248
Milwaukee Medical College.—R.	300,000	169	5	38	...	63	30	...	....
Wisconsin College of Physicians and Surgeons.—R.	“	72	2	19	...	46	30	...	....

* First session begins October, 1905.

Name of College.	Alabama, 548.	Arizona, 9.	Arkansas, 465.	California, 435.	Colorado, 146.	Connecticut, 270	Delaware, 48.	Dist. Colum., 140	Florida, 123.	Georgia, 474.	Idaho, 37.	Illinois, 2,084.	Indian Ter., 219.	Indiana, 881.	Iowa, 916.	Kansas, 493.	Kentucky, 570.	Louisiana, 475.	Maine, 202.	Maryland, 476.	Mass., 1,019.
Birmingham Medical College.—R	69	...	...	...	...	...	...	...	3	1	...	...	...	...	...	...	...	...	...	...	...
Medical College of Alabama.—R	152	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...
Medical Department Arkansas University.—R	...	1	188	...	...	...	...	...	...	1	...	...	21	1	...	...	...	1	...	...	...
Cooper Medical College.—R	1	...	...	89	...	...	...	...	...	...	1	2	...	2	5	2	...	...	4	...	1
Med. Dept. Univ. of California—R	...	...	...	97	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	1	...
California Medical College.—E	...	...	...	40	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Hahnemann Medical Coll. of the Pacific.—H	...	...	...	7	...	...	...	...	...	...	...	3	...	2	2	2	...	...	...	...	1
College of Phys. and Surg., San Francisco.—R	...	...	...	45	...	1	...	...	...	...	...	7	...	3	6	4	1	1	1	...	2
Oakland Coll. of Med. and Surgery.—R	...	...	...	12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Coll. of Med. Univ. of So. California.—R	...	...	...	46	...	...	...	...	...	...	...	5	...	...	4	...	...	2	...	...	...
College of Phys. and Surg., Los Angeles.—R	...	1	...	4	...	...	...	...	...	...	...	1	...	1	1	...	...	...	...	...	...
Denver and Gross Coll. of Medicine.—R	...	...	...	1	52	2	...	...	...	...	...	12	...	3	1	3	...	...	...	1	2
Denver Homeopathic College.—H	...	...	...	1	15	...	...	...	...	...	1	2	...	...	1	2	...	...	...	...	...
Colorado School of Medicine	...	...	...	1	34	...	...	...	...	...	...	2	...	1	0	2	...	...	3	1	...
Yale University Department of Medicine.—R	...	...	...	...	...	90	...	...	...	...	...	2	...	...	3	...	...	...	2	...	13
George Washington Univ. Dept. of Med.—R	1	...	2	3	1	2	...	49	2	5	1	13	...	6	3	2	5	4	4	23	6
Georgetown Univ. School of Medicine.—R	1	...	...	1	...	5	2	29	...	...	...	1	...	1	...	1	1	1	...	7	20
Howard University Medical Department.—R	3	...	1	...	...	...	...	34	4	10	...	2	...	2	...	3	1	3	...	5	1
Atlanta College of Phys. and Surg.—R	22	...	...	...	...	...	...	...	12	181	...	...	1	...	...	...	2	1	...	...	...
Georgia Coll. of Eclectic Med. and Surg.—E	4	...	3	...	...	...	...	...	3	38	...	...	1	...	...	...	...	...	...	...	...
Medical College of Georgia.—R	...	...	...	1	1	...	...	...	4	88	...	...	...	...	...	...	...	...	...	...	...
American Medical Missionary College.—R	...	...	...	4	...	...	...	...	...	...	...	...	...	1	11	1	...	...	1	...	1
Bennett Coll. of Eclectic Med. and Surg.—E	...	...	1	...	...	1	...	...	...	...	1	48	...	8	4	1	1	...	...	...	...
Illinois Medical College.—R	1	...	3	...	...	...	...	...	...	1	1	72	1	39	6	1	3	2	1	...	1
College of Medicine and Surgery.—Ph.M	...	...	...	1	...	...	...	...	...	...	...	27	...	1	5	...	1	...	...	...	...
College of Physicians and Surgeons.—R	...	...	2	4	1	1	...	1	...	1	1	369	1	34	43	10	3	2	1	...	1
Hahnemann Med. Coll. and Hospital.—H.*	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Harvey Medical College.—R	...	...	...	...	...	...	...	...	...	...	...	210	...	...	...	...	...	...	...	...	...
Hering Medical College—H	...	...	...	2	...	...	...	...	...	...	1	24	...	5	3	1	...	...	...	...	...
Jenner Medical College.—R	...	...	...	...	...	...	...	...	...	...	...	102	...	...	...	...	...	...	...	...	...
Northwestern University Med. School.—R	...	...	1	3	2	...	...	...	...	...	5	260	...	23	70	9	2	4	...	...	...
Rush Medical College.—R	4	4	...	9	1	1	...	1	...	2	3	170	...	51	68	20	3	...	1	2	3
National Medical University*	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
American Coll. of Med. and Surgery.—R.*	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Dearborn Medical College.—R.	...	...	...	...	...	...	...	...	...	...	...	181	...	...	...	...	...	...	...	...	...
Central College of Physicians and Surgs.—R	...	...	...	...	...	...	...	...	...	...	...	9	...	118	2	...	...	...	...	...	...
Medical College of Indiana.—R	...	...	...	1	...	...	1	...	...	...	...	7	...	244	...	...	...	...	...	...	...
Physio-Medical College of Indiana.—Ph.M	...	...	...	...	...	...	...	...	...	...	...	1	...	15	...	...	...	...	...	...	...
Eclectic Medical College of Indiana.—E	...	...	...	...	...	...	...	...	...	...	...	6	...	22	...	3	4	...	...	...	...
Fort Wayne College of Medicine.—R	...	...	...	...	...	...	...	...	...	...	...	...	...	35	...	...	...	...	...	...	...
Indiana University School of Medicine.—R	...	...	...	...	...	...	...	...	...	...	...	...	...	14	...	...	...	...	...	...	...
Drake University Coll. of Medicine.—R	...	...	...	...	...	...	...	...	...	...	...	1	...	...	51	1	...	...	...	...	...
Keokuk Med. Coll. of Phys. and Surgs.—R	...	...	...	1	1	...	...	...	...	...	1	55	...	...	111	8	...	...	...	...	...
Sioux City Coll. of Med.—R	...	...	...	...	...	...	...	...	...	...	...	8	...	1	45	...	...	...	...	...	...
State Univ. of Iowa, Homeo. Med. Dept.—H	...	...	...	...	...	...	...	...	...	...	...	...	...	...	38	...	...	...	...	...	...
State Univ. of Iowa, Med. Department.—R	...	...	...	...	...	...	...	...	...	...	...	9	...	...	252	1	...	...	...	...	1
Coll. of Phys. and Surgs. of Kansas City.—R	...	...	...	...	1	...	...	...	...	...	...	...	2	...	...	30	...	...	...	...	...
Kansas Medical College.—R	...	1	...	1	2	...	...	...	...	...	...	...	...	1	...	76	...	...	...	...	...
School of Medicine, Univ. of Kansas.—R	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	32	...	...	...	...	...
Hospital College of Medicine.—R.*	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Kentucky School of Medicine.—R.*	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Louisville Medical College.—R	10	...	5	...	1	...	...	...	3	5	...	2	8	22	2	9	54	11	...	...	...
Louisville National Medical College.—R	2	...	...	...	...	...	...	...	...	2	...	...	1	6	...	...	24	...	...	...	...
Southwestern Homeopathic Med. College.—H	...	...	...	...	...	...	...	...	...	...	...	...	...	7	...	...	11	...	...	...	...
Medical Dept. Univ. of Louisville.—R	2	...	4	...	...	1	...	...	...	...	...	6	3	21	2	...	132	2	...	3	...
Kentucky University Medical Dept.—R	7	...	2	1	...	...	...	...	2	5	...	3	1	49	3	2	158	3	1	...	...
Flint Med. Coll. of New Orleans Univ.—R	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	26	...	...	...
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...	...	...	103	...	2	...	...	...	...	...	...	...	...	10	...	1	...	...	...	2	2	...	...	1	...	1	...	1	1	...	..	220
...	...	...	17	...	1	...	...	...	1	...	...	...	...	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	..	32
...	1	...	40	...	1	...	...	...	...	...	...	...	...	6	...	...	...	...	...	...	...	...	...	...	5	...	...	...	...	...	..	116
...	...	...	27	...	...	...	...	...	...	...	...	...	...	4	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	..	56
...	...	...	32	...	9	...	...	...	1	...	...	...	...	5	...	1	...	...	...	...	...	...	...	...	1	...	...	...	1	...	..	70
...	...	...	68	...	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	..	90
2	1	4	191	2	7	...	...	1	1	...	1	2	7	2	...	...	...	...	4	1	32	...	...	2	2	6	...	...	...	...	..	427
2	2	2	134	...	4	...	...	1	...	...	...	1	2	6	2	2	...	...	1	1	7	9	...	1	7	3	8	1	1	9	..	385
2	1	2	84	1	1	...	...	1	1	...	...	...	1	4	3	3	...	...	...	...	14	...	...	...	4	...	2	...	1	1	..	275
...	...	...	44	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	3	1	...	...	...	...	1	...	...	...	..	66
...	...	...	25	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1	1	..	45
1	...	...	59	...	...	1	1	1	3	...	...	...	1	...	...	4	...	...	...	...	1	...	...	...	...	...	...	...	1	14	..	108
...	1	...	...	...	76	...	...	...	...	...	...	...	...	...	...	...	...	...	4	...	...	...	...	...	...	...	...	...	...	...	..	92
2	1	...	2	1	102	...	...	1	1	...	...	1	...	...	...	...	...	...	9	...	...	...	...	...	...	...	...	2	1	...	..	167
...	2	...	4	...	52	...	...	...	...	...	...	...	1	...	...	...	...	...	5	...	...	...	...	...	...	...	...	...	...	1	..	81
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...	...	...	...	...	...	...	...	...	161	...	...	...	...	...	...	2	...	...	...	...	...	...	2	...	...	...	...	...	...	1	..	172

Name of College.	Alabama, 548.	Arizona, 9.	Arkansas, 465.	California, 435.	Colorado, 146.	Connecticut, 270	Delaware, 48.	Dist. Colum., 140	Florida, 123.	Georgia, 474.	Idaho, 37.	Illinois, 2,084.	Indian Ter., 219.	Indiana, 881.	Iowa, 916.	Kansas, 493.	Kentucky, 570.	Louisiana, 475.	Maine, 202.	Maryland, 476.	Mass., 1,019.
College of Physicians and Surgeons.—R	4	...	...	4	2	14	1	...	3	2	...	2	...	2	1	1	1	...	5	1	18
Cornell University Medical College.—R	2	...	1	2	...	11	...	...	...	...	...	2	...	...	...	...	1	1	2	...	6
Eclectic Medical College.—E	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Long Island College Hospital.—R	...	...	...	...	1	5	...	...	...	...	...	...	...	...	...	...	...	...	1	3	10
New York Homeo. Med. Coll. and Hosp.—H	...	...	...	1	...	10	1	1	...	...	...	...	...	...	...	...	...	...	...	...	2
N. Y. Med. Coll. and Hosp. for Women.—H	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Univ. and Bellevue Hosp. Medical Coll.—R	2	...	...	1	...	16	...	...	1	1	...	...	...	3	...	1	...	...	1	...	6
Syracuse Univ. Coll. of Med.—R	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	1	2	2
University of Buffalo, Medical Dept.—R	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Leonard Medical School.—R	10	...	3	...	...	...	...	3	2	8	...	...	...	...	...	...	...	1	...	...	...
Wake Forest School of Medicine.—R	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
North Carolina Medical College.—R	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...
Med. Department, University of N. Car.—R	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...
Western Reserve University Med. Coll.—R	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	2	...	...	...	...	1
Cleveland Coll. of Physicians and Surgs.—R	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1	...	1	...	...	...	...
Cleveland Homeopathic Med. College.—H	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...
Eclectic Med. Institute—E	...	...	1	...	1	...	...	...	3	1	...	12	1	11	2	1	16	...	...	...	...
Medical College of Ohio.—R	...	...	...	...	...	...	...	...	...	...	...	3	...	8	...	...	16	...	...	...	...
Pulte Medical College.—H	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	1	...
Miami Medical College.—R	1	...	...	...	...	...	...	...	...	...	...	...	...	7	...	1	6	...	...	1	...
Ohio Medical University.—R	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	1	...	1	...	...
Starling Medical College.—R	...	...	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
[illegible] R	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
[illegible] rth University.—R	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
[illegible] of Oklahoma.—R	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
University of Oregon, Medical Dept.—R	...	...	...	2	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...
Medical Department, Willamette Univ.—R	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Temple Coll. of Phila., Dept. of Medicine.—R	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1
University of Pennsylvania, Dept. of Med.—R	2	...	1	2	2	4	4	4	2	1	...	3	...	6	3	2	5	...	3	7	15
Hahnemann Med. Coll. and Hospital.—H	...	...	...	7	...	...	3	1	...	...	...	...	...	1	...	1	1	...	...	3	2
Jefferson Medical College.—R	1	...	2	3	1	11	11	1	2	3	3	5	1	9	7	...	4	...	4	2	27
Woman's Med. Coll. of Pennsylvania.—R	...	...	...	1	...	1	2	2	...	...	...	2	...	1	...	2	1	...	4	...	6
Medico-Chirurgical Coll. of Philadelphia.—R	...	...	...	1	...	3	4	...	1	...	...	1	...	...	1	...	1	1	2	2	5
Western Pennsylvania Medical College.—R	...	...	...	...	...	...	...	...	...	...	...	4	...	7	...	...	...	...	...	...	...
San Tomaso University, Manila.—R	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Med. Coll. of State of South Carolina.—R	...	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	1	...
Tennessee Medical College.—R	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	6	...	...	...	...
Knoxville Medical College.—R	3	...	2	1	...	...	...	1	4	3	...	1	2	1	...	...	4	1	...	1	...
Medical Dept., University of Nashville.—R	38	...	14	1	...	...	...	...	1	3	...	1	1	1	...	...	9	39	...	...	...
Vanderbilt University Med. Department.—R	15	...	5	4	...	...	...	...	...	7	...	1	1	...	...	...	13	6	...	1	...
University of Tennessee, Medical Dept.—R	10	...	6	...	...	1	...	...	1	1	...	2	1	...	...	1	9	2	...	...	...
Meharry Medical College.—R	20	...	24	...	1	...	...	...	24	20	...	3	2	1	...	8	15	9	...	1	...
Memphis Hospital Medical College.—R	23	...	70	...	...	...	...	...	1	2	...	...	19	2	...	1	1	85	...	...	...
University of the South.—R	8	...	4	...	...	...	...	...	1	15	...	2	...	1	...	...	1	13	...	...	2
Chattanooga Medical College.—R	54	...	11	2	4	2	1	...	8	16	1	1	6	...	3	1	5	2	...	...	1
Univ. of West Tennessee, Med. Dept.—R	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Med. Dept., Ft. Worth University.—R	...	...	6	...	...	...	...	...	...	...	...	...	44	1	...	1	...	5	...	...	...
University of Texas, Dept. of Med.—R	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...
Baylor University College of Medicine.—R	1	...	2	...	...	...	...	...	...	1	...	...	16	...	...	...	...	2	...	...	...
Physio-Medical Coll. of Texas.—Ph.M	1	...	1	...	...	...	...	...	...	...	...	...	7	...	...	...	...	...	...	...	...
Gate City Medical College.—R	...	...	30	...	...	...	...	...	...	1	...	1	16	1	...	...	1	14	...	...	...
Southwestern Univ. Medical College.—R	...	1	1	...	...	...	...	...	...	...	...	...	2	...	...	...	...	2	...	...	...
College of Physicians and Surgeons.—R	...	...	3	...	...	...	...	...	...	...	...	1	5	...	...	1	...	...	...	...	...
University of Vermont, Medical Dept.—R	...	...	...	...	...	5	...	...	...	...	...	...	...	...	...	...	...	...	7	...	19
Medical College of Virginia.—R	1	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	1
University College of Medicine.—R	1	...	...	1	...	...	2	...	3	...	...	...	...	...	...	...	...	...	...	1	1
Univ. of Virginia, Dept. of Med.—R	6	...	2	...	...	2	1	2	3	2	...	...	...	1	...	1	5	1	...	4	2
University of West Virginia.—R	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Milwaukee Medical College.—R	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Wisconsin Coll. of Phys. and Surgs.—R	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

* Information not obtainable.

progress in art, science and letters. (The examination to avoid exact dates and minor details.)

5. Latin Language. (a) Grammar; (b) four books of Cæsar, its equivalent.

The colleges recognized as in good standing by this organization are: Hahnemann Medical College of the Pacific; Denver Homeopathic Medical College; Hahnemann Medical College, Chicago; Hering Medical College; Homeopathic Medical Department of the State University of Iowa; Southwestern Homeopathic College, Louisville, Ky.; Kansas City Hahnemann Medical College; Southern Homeopathic Medical College, Baltimore, Md.; Boston University School of Medicine; Homeopathic Medical College of University of Michigan; Detroit Homeopathic College; College of Homeopathic Medicine and Surgery of University of Minnesota; Homeopathic Medical College of Missouri; New York Homeopathic Medical College; New York Medical College for Women; Cleveland Homeopathic Medical College; Pulte Medical College, Cincinnati; Hahnemann Medical College of Philadelphia.

The Secretary is Dr. Chas. Gatchell, 100 State St., Chicago.

NATIONAL CONFEDERATION OF ECLECTIC MEDICAL COLLEGES.

The following are the present minimum requirements for admission to colleges members of this Association:

1. Good English education, to be attested by (a) first grade teacher's certificate; or (b) a diploma from a graded high school, or literary or scientific college or university; or (c) regents medical students certificate; or (d) entrance examination covering a good English education including an elementary knowledge of natural history, physics and Latin.

2. Graduates from pharmaceutical, dental and veterinary colleges may be allowed one year's time on a four-year medical course, only on condition that they comply with the entrance requirements, and pass all examinations and perform all laboratory work embraced in the course of study of the Freshman year. One year's advanced standing may be given students with degrees from a recognized literary college.

3. The course of instruction shall consist of a four-year graded course or its equivalent, as herein prescribed, including four sessions of six months each in four *different calendar* years.

The following colleges are members of this confederation:

American Medical College, St. Louis, Mo.; Bennett College of Eclectic Medicine and Surgery, Chicago, Ill.; California Medical College, San Francisco, Cal.; Eclectic Medical College of the City of New York, New York, N. Y.; Eclectic Medical Institute, Cincinnati, Ohio; Georgia College of Eclectic Medicine and Surgery, Atlanta, Ga.; Lincoln Medical College, Lincoln, Neb.; Kansas City Eclectic Medical University, Kansas City, Mo.

The secretary-treasurer is John K. Scudder, M.D., 1009 Plum St., Cincinnati, Ohio.

Michigan, 646.	Minnesota, 427.	Mississippi, 557.	Missouri, 1,138.	Montana, 30.	Nebraska, 361.	New Hamp., 118.	New Jersey, 487.	New Mexico, 19.	New York, 2,423.	Nevada, 13.	N. Carolina, 445.	N. Dakota, 70.	Ohio, 1065.	Oklahoma, 117.	Oregon, 158.	Penna., 2,022.	Rh. Island, 108.	So. Carolina, 232.	So. Dakota, 93.	Tennessee, 683.	Texas, 1,012.	Utah, 68.	Vermont, 137.	Virginia, 596.	Washington, 102.	West Va., 566.	Wisconsin, 530.	Wyoming, 13.	Canada, 183.	Foreign, 398.	P. Islands, 68.	Total, 26,147.
1	1	2	3	...	...	3	76	...	360	1	1	...	8	...	2	9	7	3	...	2	2	...	2	1	1	...	2	...	4	16	...	568
1	...	2	2	...	1	1	36	...	297	...	...	...	5	...	2	2	4	...	...	...	...	...	1	...	1	...	...	...	3	6	...	392
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3	...	...	...	...	...	3	47	...	266	...	...	...	6	...	...	7	...	...	...	1	2	4	2	...	...	...	...	2	5	11	...	391
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...	...	...	...	...	...	...	...	...	219	...	...	...	1	...	...	6	...	...	...	...	...	...	...	1	...	...	...	...	2	1	...	231
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...	4	1	1	...	1	5	37	...	21	...	4	...	18	1	2	346	2	1	...	...	6	2	1	4	4	7	1	...	3	9	...	546
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...	2	2	1	1	2	2	44	...	16	...	16	...	22	...	5	418	6	1	2	...	4	2	2	4	2	8	...	2	4	11	...	676
2	...	3	...	...	2	2	13	...	7	...	2	...	2	...	1	70	2	2	...	1	3	...	...	1	1	...	...	...	2	13	...	151
1	...	...	...	...	1	...	38	...	12	1	2	...	2	...	1	369	...	...	...	...	1	2	...	2	...	1	1	...	...	5	...	461
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1	...	42	19	...	...	...	1	...	1	...	8	...	4	3	...	1	...	13	...	59	38	...	...	1	...	1	...	...	...	8	...	328
...	...	157	2	...	...	...	...	...	...	...	...	...	...	1	...	1	...	...	...	67	44	...	...	...	...	...	...	...	...	...	...	476
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3	...	8	...	...	...	...	...	1	3	...	11	...	3	1	1	...	2	8	...	83	4	1	...	8	1	8	...	...	...	4	...	268
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1	1	2	...	1	...	1	...	...	3	...	2	...	1	...	...	5	...	4	...	5	2	...	...	75	...	7	1	...	...	2	...	145
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States that Have no Medical School.—The following states and territories contain no medical college: Arizona, Delaware, Florida, Hawaii, Idaho, Indian Territory, Montana, Nevada, New Jersey, New Mexico, North Dakota, Porto Rico, Rhode Island, South Dakota, Utah, Washington, and Wyoming.

Philippine Islands.—Owing to the scarcity of physicians in the Philippine Islands, and also for the purpose of improving the present medical service, the Philippine Islands Medical Association, at its second annual meeting held in March, 1905, recommended the establishment of a modern school of medicine in Manila as a part of a general university.

Proposed Mergers.—It has been rumored that the Detroit College of Medicine will be merged with the University of Michigan with a view of teaching the last two years of the medical course at Detroit instead of at Ann Arbor.——Owing to the severity of the entrance requirements to medical colleges of Ohio, the number of matriculants fell off considably last year. This scarcity of pupils has brought about a revival of the talk of consolidating two and possibly three of the Cincinnati medical colleges into one big institution. Nothing positive has been done in the matter.

New College and Colleges Discontinued.—During the year only one new college has been formed, a most unusual occurrence. However, some changes of interest have taken place in the medical college world. The Kansas City Medical College, the Medico-Chirurgical College of Kansas City, Mo., and the College of Physicians and Surgeons of Kansas City, Kan., have been absorbed by the University of Kansas, and hereafter this institution will teach the four years of medicine. The first two years of the course will be given at Lawrence, the last two at Kansas City, Kan., Kansas City, Mo., and Rosedale, Kan., where a new hospital has been erected by authority of the state.——In St. Joseph, Mo., the Ensworth Medical College and the Central Medical College have combined, assuming the name of Ensworth-Central Medical College.——Dallas Medical College, Dallas, Texas, has been merged with the Medical Department of Baylor University of the same city.——Bell Medical College, Dallas, Tex., has changed its name to College of Physicians and Surgeons.——The Columbian University, Washington, D. C., is now known as the George Washington University.—The new college formed during the year is the Eclectic Medical Institute of Dallas, Texas. The Epworth University, Oklahoma City, Okla., which last year gave instruction in the first year of the medical course, now proposes to teach the full four years.——The Fordham College Medical Department, which was instituted last year, will open its first session in October, 1905.——The Medical Department of the University of Porto Rico has not yet been organized.——Harvey Medical College, Chicago, has ceased to exist.——Lombard College, Galesburg, Ills., has discontinued teaching the first year of the medical course.

Therapeutics

[It is the aim of this department to aid the general practitioner by giving practical prescriptions and, in brief, methods of treatment for the diseases seen especially in every-day practice. Proper inquiries concerning general formulae and outlines of treatment are answered in these columns.]

Bronchial Asthma.

In considering the treatment of bronchial asthma *The Practitioner*, London, calls attention to the importance of distinguishing it from the other forms of asthma, such as cardiac asthma, renal asthma, hay asthma, thymic asthma or laryngismus stridulus due to enlargement of the thymus gland.

Bronchial asthma or spasmodic asthma is the condition in which there is a marked neurotic element and is caused by a sudden contraction of the unstriped muscular fibers in the walls of the bronchioles, which are innervated by the pneumogastric nerve. The spasms usually occur at night, accompanied by wheezing through the day.

The treatment, as described by the *Practitioner*, is arranged under two heads:

1. That to be resorted to during the attack.
2. That to be adopted during the intervals to prevent their recurrence if possible.

During the attack a little chloroform should be inhaled to produce rapid relaxation of the bronchial muscles. Cigarettes of stramonium leaves may be of service. A powder consisting of pulverized belladonna, *stramonium and hyoscyamus* leaves with some potassium nitrate burnt and the fumes inhaled will often bring relief. An inhalation of from three to *five minims* (.20-.30) of the nitrite of amyl from a crushed capsule frequently relieves the paroxysm. Between the attacks the following combinations, containing potassium iodid, *is recommended:*

℞.	Potass. iodidi	gr. x		65
	Tinct. lobeliæ	ʒss	2	
	Vini ipecacuanhæ	m. xii		75
	Aquæ chloroformi q. s. ad	℥i	30	

M. Ft. mistura. Sig.: Two tablespoonfuls three times a day after food. Or:

℞.	Potassii iodidi	gr. xii		75
	Ext. stramonii	gr. 1-6		01
	Spts. chloroformi	m. xx	1	30
	Spts. ammon. arom	m. xx	1	30
	Aquæ q. s. ad	℥ss	15	

M. Sig.: To be taken at one dose on retiring at night.

[Hypodermic injections of morphin with cocain, or morphin grain 1-3 (0.2) and atropin grain 1/100 (.066) are also recommended, but it is not advisable to use these drugs in this condition unless in extreme and aggravated cases after all other remedies have been tried.]

Two other considerations are of importance in the treatment of bronchial asthma. 1. The place of abode must suit the patient. High, dry altitudes are preferable in some cases, in others, the seaside, country, or city may best suit the individual. 2. The diet must be carefully looked after and regulated. Heavy meals should not be taken in the evening, as dyspepsia is often the starting point of an attack. Whisky and a few minims of the spirits of chloroform often relax the bronchioles and check an oncoming attack.

Other combinations containing lobelia are recommended by some authors as follows:

℞.	Tinct. lobeliæ ether	ʒii	8	
	Aquæ minth. pip	℥iv	120	

M. Sig.: One tablespoonful every half hour until relieved. Or:

℞.	Tinct. lobeliæ	ʒi	4	
	Tinct. belladonnæ	ʒi	4	
	Tinct. aconiti	m. xx	1	30
	Aquæ cinnamomi q. s. ad	℥iii	90	

M. Sig.: *One* tablespoonful every three or four hours until relieved.

Between the attacks the following may be given:

℞.	Potass. iodidi	ʒiiss	10	
	Potass. bicarb.	ʒv	20	
	Tinct. bellad.	ʒiii	12	
	Infus. gent. co. q. s. ad	℥iv	120	

M. Sig.: One teaspoonful in water three times a day, after food.

Stramonium may be administered during or at the beginning of an attack, combined as follows:

℞.	Tinct. stramonii	ʒiv	15	
	Tinct. aconiti	ʒii	8	
	Potass. bromidi	℥i	30	
	Aquæ chloroformi q. s. ad	℥iii	90	

M. Sig.: One teaspoonful in water at the beginning of the attack. Or:

℞.	Ext. stramonii	gr. vi		40
	Pulv. opii	gr. iv		25
	Camphoræ	gr. xx	1	30
	Mft. cap.	no. xii		

Sig.: One capsule three times a day.

High Arterial Blood Pressure.

H. D. Rolleston, in an article in the *Clinical Journal* (London), enumerates in a general way the following most important causes of high arterial tension:

1. Poison taken into the body, such as lead.
2. Autointoxication.
3. Imperfect elimination by the kidneys, skin or blood.
4. Nervous influences, such as worry and strenuous living.
5. Excessive influence of the adrenal glands.

The results of this continued high arterial pressure are hypertrophy of the left ventricle, atheroma, endarteritis and granular kidney.

The symptoms arising from such conditions are numerous, including mental weakness, senility, syncopal attacks, dilated heart, angina pectoris, granular kidney, pleural effusions, diabetes, loss of weight and neurasthenic conditions.

In the treatment of this important pathologic condition the cause in each case must be considered. The general conditions of life should be made simple and healthy. Food must be taken in moderation. Without becoming vegetarian, the author recommends less proteid and relatively more carbohydrate. Mastication should be thorough. Extreme moderation in the use of alcohol or total abstinence should be insured. Exercise, but not to excess, is very important in preventing high tension. The exercise should be taken regularly and in the open air. Passive exercise, or massage to the muscles of the limbs, lowers blood pressure and is of benefit in this condition. Superficial massage raises arterial tension. Elimination by the skin must be kept up and if necessary Turkish baths may be taken to dilate the peripheral vessels and thus lower the blood pressure. The reduction of blood pressure by medicinal means is a difficult task, according to this author. The number of drugs which will do this effectively is small and at the same time a too sudden reduction of blood pressure may produce harmful results.

The author calls attention to the danger of producing an irregular pulse and cardiac failure, as in one case, by the reduction of arterial pressure from 220 to 110 mm. of mercury, by administration of the tincture of aconite in five minim (.30) doses. Of the vasodilators, nitrite of amyl has only transient action, the nitrite of soda having a more persistent effect. In this connection, he states that it is highly probable that insufficient doses of these preparations are given and disappointment in the results follow.

The official dose of sodium nitrite is from one to two grains (.06-.12), but he quotes the use of this preparation in doses ranging from one and a half (.90) to five grains (.30) often repeated.

Spiritus Glycerylis Nitratis (U. S. P., Eighth Dec. Rev.) (1 per cent.) should be given in doses ranging up to ten minims (.65). The iodids are commonly employed to bring down the arterial tension, but in ordinary doses the author does not believe they have much effect unless by possibly stimulating the thyroid gland to increased secretion, and in that way reducing arterial tension.

Loomis recommends chloral hydrate in five grain doses (.30) as of more benefit than spirits of glyceryl trinitrate. Salines and small doses of mercurials are of value in preventing intestinal fermentation, the products of which, when absorbed, tend to constrict the blood vessels and to increase the arterial tension.

In Bright's disease, accompanied by high arterial tension, the following combination is of value:

℞. Nitroglycerini	gr. 1/4	015
Tinct. strophanthi	ʒii	8
Tinct. belladonnæ	ʒi	4
Elix. simplicis q. s. ad	℥iii	90

M. Sig.: One teaspoonful from every four to six hours until the effects on the pulse are shown.

N. S. Davis, in the *Sys. of Phys. Therapeutics*, recommends, when the arteries are sclerosed, that milk should form a considerable element of the diet, vegetables, breads, cereals, fruits and eggs moderately, fish, oysters and the white meat of fowls may be used.

The red meats, such as beef and mutton are the chief sources of alimentary toxins and should be eaten daily and should be entirely excluded from the diet if headache, insomnia, nocturnal distress, sighing respiration or dyspnea suggests autointoxication. When such symptoms arise, a milk diet should be prescribed for a few days or otherwise modified by the addition of cereals, bread and a small quantity of vegetables and fruits.

The necessity of eating sparingly rather than heartily is greater in proportion as the lesions of the arteries become more pronounced.

At all times pork and 'high' game, meat stews, rich gravies, greasy soup, preserved meat, crabs, and lobsters must be avoided.

Medicolegal

Liability for Performance of Unauthorized Operation.—The Supreme Court of Minnesota says that the question raised in the case of Mohr vs. Williams as to whether the consent of a patient is necessary to the performance of an operation is new in that state. At least, no case was called to the court's attention wherein it has been discussed or decided, and very few cases were cited from other courts. Continuing, it says that it has given the matter very deliberate consideration, and is unable to concur with counsel for the defendant in their contention that the consent of the plaintiff was unnecessary in this case. It can not be doubted that ordinarily the patient must be consulted, and his consent given, before a physician may operate on him. 1, Kinkead on Torts, section 375, states the general rule on this subject as follows: "The patient must be the final arbiter as to whether he will take his chances with the operation, or take his chances of living without it. Such is the natural right of the individual, which the law recognizes as a legal one. Consent, therefore, of an individual, must be either expressly or impliedly given before a surgeon may have the right to operate." There is logic in the principle thus stated, for, in all other trades, professions or occupations, contracts are entered into by the mutual agreement of the interested parties, and are required to be performed in accordance with their letter and spirit. No reason occurs to the court why the same rule should not apply between physician and patient. If the physician advises his patient to submit to a particular operation, and the patient weighs the dangers and risks incident to its performance, and finally consents, he thereby, in effect, enters into a contract authorizing his physician to operate to the extent of the consent given, but no further.

It was not, however, contended by the defendant that under ordinary circumstances consent is unnecessary, but that, under the particular circumstances of this case, consent was implied; that it was an emergency case, such as to authorize the operation without express consent or permission. The defendant was a physician and surgeon of standing and character, making disorders of the ear a specialty and having an extensive practice. He was consulted by the plaintiff, who complained to him of trouble with her right ear, and, at her request, made an examination of that organ for the purpose of ascertaining its condition. He also at the same time examined her left ear, but, owing to foreign substances therein, was unable to make a full and complete diagnosis at that time. The examination of her right ear disclosed a large perforation in the lower portion of the drum membrane, and a large polyp in the middle ear, which indicated that some of the small bones of the middle ear (ossicles) were probably diseased. He informed the plaintiff of the result of his examination, and advised an operation for the purpose of removing the polyp and diseased ossicles. After consultation with her family physician, and one or two other consultations with the defendant, the plaintiff decided to submit to the proposed operation. She was not informed that her left ear was in any way diseased, and understood that the necessity for an operation applied to her right ear only. She repaired to the hospital, and was placed under the influence of anesthetics; and, after being made unconscious, the defendant made a thorough examination of her left ear, and found it in a more serious condition than her right one. A small perforation was discovered high up in the drum membrane, hooded, and with granulated edges, and the bone of the inner wall of the middle ear was diseased and dead. He called this discovery to the attention of the plaintiff's family physician, who attended the operation at her request, who also examined the ear and confirmed the defendant in his diagnosis. The defendant also further examined the right ear, and found its condition less serious than expected, and finally concluded that the left, instead of the right, should be operated on, devoting to the right ear other treatment. He then performed the operation of ossiculectomy on the left ear, removing a portion of the drum membrane and scraping away the diseased portion of the inner wall of the ear. The operation was in every way successful and skillfully performed. But the plaintiff claimed that the operation greatly impaired her hearing, seriously injured her person, and, not having been consented to by her, was wrongful and unlawful, constituting an assault and battery. She obtained a verdict for $14,322.50 damages, but a new trial was granted on the ground that this was excessive.

The Supreme Court affirms the order granting a new trial, but holds that the defendant had no authority to perform the operation without the plaintiff's consent, express or implied. That her consent was not expressly given, and whether it should be implied from the circumstances of the case was a question for the jury to determine. That, if the operation was not authorized by the express or implied consent of the plaintiff, it was wrongful and unlawful and constituted in law an assault and battery. It is unnecessary to show in a civil action for assault and battery that the defendant intended by the act complained of to injure the plaintiff. It is sufficient if it appear that the act was unlawful.

The medical profession, the Supreme Court says, has made signal progress in solving the problems of health and disease, and they may justly point with pride to the advancements made in supplementing Nature and correcting deformities and relieving pain and suffering. The physician impliedly contracts that he possesses, and will exercise in the treatment of patients, skill and learning, and that he will exercise reasonable care and exert his best judgment to bring about favorable results. The methods of treatment are committed almost exclusively to his judgment, but the court is aware of no rule or principle of law which would extend to him free license respecting surgical operations. Reasonable latitude must, however, be allowed the physician in a particular case; and the court would not lay down any rule which would unreasonably interfere with the exercise of his discretion, or prevent him from taking such measures as his judgment dictated for the welfare of the patient in a case of emergency. If a person should be injured to the extent of rendering him unconscious, and his injuries were of such a nature as to require prompt surgical attention, a physician called to attend him would be justified in applying such medical or surgical treatment as might be necessary for the preservation of his life or limb, and consent on the part of the injured person would be implied. And, again, if, in the course of an operation to which the patient consented, the physician should discover conditions not anticipated before the operation was commenced, and which, if not removed, would endanger the life or health of the patient, he would, though no express consent was obtained or given, be justified in extending the operation to remove and overcome them.

But such was not the case at bar. The diseased condition of the plaintiff's left ear was not discovered in the course of an operation on the right, which was authorized, but, on an independent examination of that organ, made after the authorized operation was found unnecessary. Nor was the evidence such as to justify the court in holding, as a matter of law, that it was such an affection as would result immediately in the serious injury of the plaintiff, or such an emergency as to justify proceeding without her consent. She had experienced no particular difficulty with that ear, and the questions as to when its diseased condition would become alarming or fatal, and whether there was an immediate necessity for an operation were, under the evidence, questions of fact for the jury. The evidence also made the qeustion of whether, if the family physician by his conduct assented to the operation, the plaintiff was bound thereby, one of fact for the jury to determine.

The amount of the plaintiff's recovery, if she was entitled to recover at all, must depend on the character and extent of the injury inflicted on her, in determining which the nature of the malady intended to be healed and the beneficial nature of the operation should be taken into consideration, as well as the good faith of the defendant.

Current Medical Literature

American Medicine, Philadelphia.

August 5.

1 Normal Malay and the Criminal Responsibility of Insane Malays. C. E. Woodruff, New York.
2 *Why Surgical Fixation of a Movable Kidney Will Not Relieve Dyspeptic and Nervous Symptoms. C. D. Aaron, Detroit, Mich.
3 *Management of Transmissible Diseases. D. H. Bergey, Philadelphia.
4 *Hypnotic Cumulative Action as a Therapeutic Guide. G. F. Butler, Chicago.
5 Systematic Examination of the Eyes of Defectives. F. P. Lewis, Buffalo, N. Y.
6 *Arteriosclerosis. G. Stockton, Columbus, Ohio.
7 *The Busy Practitioner from a Business Point of View. A. J. Colton, Buffalo, N. Y.

2. **Why Surgical Fixation of a Movable Kidney Will Not Relieve Dyspeptic and Nervous Symptoms.**—Aaron says that the study of several hundred cases in his own practice has led him to the belief that movable kidney in itself can not produce all the dyspeptic and nervous symptoms of which patients complain, unless there is a displacement of some other organ in the abdomen. Cases in which the kidney alone is movable are those that give few or no symptoms. The author's results in over 600 cases, with a properly fitting band, have proved eminently satisfactory. Before fitting a band to patients with movable kidney, the location of all the abdominal organs must be accurately made out by palpation, auscultatory percussion, transillumination, inflation, *x*-ray, etc. A movable kidney is only pathologic when it is palpable. The irrationality of producing a pathologic condition by fixing a kidney that ought to be mobile, therefore, can readily be seen. When a patient is in the dorsal decubitus position, gravity carries the kidney back to its normal position. This can not take place when a kidney is surgically fixed, and under these circumstances there is always an abnormal condition. In cases of movable kidney, surgeons irrationally endeavor to bring about an abnormal adhesion, and in this way induce a condition that may aggravate the symptoms they are endeavoring to relieve.

3. **Management of Transmissible Diseases.**—Bergey says that the general prevalence of some of the transmissible diseases may be attributed to two important causes: (1) The infection of large numbers of individuals through mild and often unrecognized cases; and (2) the failure to enforce the sanitary precautions that would prevent the dissemination of infectious materials. The difficulty experienced in the satisfactory isolation of cases of transmissible disease in private houses calls for the more general treatment of these diseases in proper isolation hospitals. There are at least four important sources of danger from such hospitals, yet with proper equipment and management all these dangers may be eliminated. They are (1) the danger of the dissemination of infectious materials through the drainage; (2) the danger of the dissemination of infectious materials by means of air currents; (3) the danger of the dissemination of infectious materials by insects or vermin; (4) the danger of the dissemination of infectious materials by the physicians, nurses, attendants, visitors, or the convalescents.

4. **Hypnotic Cumulative Action as a Therapeutic Guide.**—Butler discusses the principle of aggravation of symptoms from the standpoint of therapeutic indication, so far as hypnotics are concerned. The cumulative effects of the hypnotics, as shown by their extreme effect hours after their first administration, indicate that this can be secured by broken doses given at intervals, so as to secure the acme of influence during the hours after 12, midnight, when this influence is most needed. The various alterative effects of the hypnotics serve as an indication that they will counteract the effects occasioned by the products of altered metabolism which are irritating the monarchical vasomotor center of the medulla. The synthetics, which are more potent in these particulars, can be aided, and their injurious effects removed by the addition of vegetable hypnotics, like conium, and those derived from the solanacea, as well as certain opium derivatives.

6. **Arteriosclerosis.**—Stockton states that heredity, together with syphilis, alcohol, gout, etc., are, in his opinion, the most prominent etiologic factors. He discusses the pathologic changes in the blood vessels and calls attention to the symptoms in the various forms of the disease, particularly the cardiac form. He directs attention to renal sclerosis, and regards chronic interstitial nephritis as an important cause of the cardiac form of the disease and also of sclerosis of the encephalon. The importance of recognizing the disease in the early stages is emphasized and treatment is fully discussed.

7. **The Busy Practitioner from a Business Point of View.**—Colton has devised a card index system, whereby a physician can keep his own books as easily as he can keep the ordinary visiting list.

Medical Record, New York.

August 5.

8 *Syphilitic Spinal Paralysis, with Special Reference to the Type Described by Erb. W. J. Dougherty, New York.
9 *Copper and Zinc Poisoning—Brass Poisoning. M. H. Sicard, New York.
10 *Rheumatism of the Feet. L. W. Ely, New York.
11 *Gases of the Body. L. H. Watson, Chicago.
12 *Importance of Early Recognition of Valvular Disease in Children. A. E. Childs, New York.
13 *Fibroma of the Ileum, Producing Obstruction by Invagination; Enterotomy; Recovery. H. A. Royster, Raleigh, N. C.

8. **Syphilitic Spinal Paralysis.**—According to Dougherty, the time that has elapsed between the primary infection and the onset of symptoms indicating medullary involvement must be taken into consideration, and those cases developing within a few years after the luetic infection, even though slow in onset may be looked on as an expression of secondary or tertiary syphilis, whereas, if a considerable period of time has elapsed before the beginning of the symptoms referable to the cord, the changes must be due to what he calls the terminal syphilitic stage. He describes the histories and pathologic findings in two cases of the former class, which lead him to conclude that it is the distribution and dissemination of the vascular lesion rather than any special difference in their nature which determines which type of spinal syphilis shall ensue, and that the so-called Erb's syphilitic spinal paralysis is *not*, as Erb is inclined to believe, necessarily dependent on a system disease of the spinal cord.

9. **Copper, Zinc and Brass Poisoning.**—Sicard describes the technical processes employed in the production of copper, zinc, and brass, and the toxic effects to which the workmen engaged in them are subject.

10. **Rheumatism of Feet.**—Ely says that among the patients seeking relief at an orthopedic clinic probably the most frequent complaint is "rheumatism of the feet." There is no "rheumatism of the feet." One of the commonest affections giving rise to pain in the feet is flat foot. Another is anterior metatarsalgia, or Morton's toe. Gonorrheal arthritis or periarthritis of the ankle has often been observed, and the author says that there is a form of gonorrheal infection characterized by extreme sensitiveness about the sole, to which he gives the name of gonorrheal foot. The pathology of this affection is still a matter of doubt. Hysteria may simulate rheumatism of the feet, and tuberculosis of the ankle and tarsus must also be carefully excluded, as any circumscribed, persistent, painful swelling in the foot, especially of a child, is to be viewed with extreme suspicion. The sequelæ of fractures, and the pains of late syphilis or of locomotor ataxia must also be kept in mind.

Gout and acute rheumatism itself close the list of such affections, and it is pointed out that acute articular rheumatism never leaves behind it a damaged joint. The treatment of these conditions is briefly outlined, the chief adjuvants required being zinc oxid plaster, plaster of Paris, a few drugs, and some assistance from the bracemaker and shoemaker.

11. **Gases of Body.**—Watson says that some of the gases, like oxygen, nitrogen, and carbon dioxid, are essential to our existence, but others are waste products, and appendicitis, intestinal obstruction, ovarian disease and heart troubles may be simulated by their presence in the intestinal tract. Nitrogen, oxygen, carbon dioxid, sulphureted and carbureted hydrogen, and marsh gas are the principal gases of the body. Carbon dioxid is the greatest in volume and the most widely diffused. It has usually been designated as a poisonous gas, but modern physiologic chemistry takes a different view of it, and it can be considered poisonous only when it is an obstruction of respiration. Large amounts may be found in the stomach and bowels in health, and still more in neurotic conditions, but its coefficient of absorption is high and but little inconvenience results. The accumulation of gas in the bowels may give rise to diagnostic difficulties, and the author cites several such cases. Lactic, acetic, and butyric acid fermentation, and the decomposition of fats, proteid matter and cellulose are all concerned in the formation of intestinal gases. When loops of gut are strangulated, first water and later gas forms in them, giving rise to meteorism. Phantom tumors are of this order. Headache, vertigo, and nausea are often the result of the presence of sulphureted hydrogen in the bowel. The formation of intestinal gases must be controlled by proper management of the diet.

12. **Importance of Early Recognition of Valvular Disease in Children.**—Childs speaks principally of valvular disease of rheumatic origin. He defines rheumatic endocarditis by saying that it is an inflammation of the lining membrane of the heart commonly confined to the valves, manifested by stiffness or pain in the joints or tendon sheaths, or in any of the muscles of the body, from the most trivial or obscure form to a well-marked arthritis. It is usually accompanied by rapid heart action without regard to intermittency or irregularity, a low grade of fever, ofttimes but a half degree, a soft blowing, usually systolic murmur at the apex of the heart, and by a well-marked leucocytosis. He calls attention to the necessity for careful physical examination of children, emphasizing the fact that endocarditis in children is very often overlooked in its early stages because the manifestations of rheumatism in children are usually very obscure. They may appear only as the so-called wandering or growing pains, or there may be only stiffness, or definite joint pains alone, or joint pains plus swelling and redness. Any muscular pain, no matter how slight or where located, may mean an associated endocarditis. In the treatment especial attention must be paid to the heart muscle by rest and general systematic treatment to prevent anemia and malnutrition.

13. **Fibroma of Ileum, Producing Obstruction by Invagination.**—Royster gives the history of a man of 42 who for about six months had suffered from symptoms pointing to a progressive growth of the intestine. Finally there came an attack of obstruction, which on opening the abdomen was found to be caused by an invagination of the ileum secondary to the presence in the gut of a pedunculated fibroma, the size of a walnut. This was removed through a longitudinal incision by excising the ellipse of mucous membrane surrounding its base, and the intestinal wound closed with three rows of continuous sutures of silk, one for each coat and an extra interrupted Lembert stitch on the peritoneal coat. The patient made a good recovery.

Medical News, New York.

August 5.

14 Beginnings of the Psychoses. W. K. Walker, Dixmont, Pa.
15 *Galvanism as a Curative Agent in Nervous Diseases: Importance of Equipment and Technic. W. B. Pritchard, New York.
16 *Appendicitis: Medical and Surgical. R. R. Kime, Atlanta, Ga.
17 Attempt to Adapt for Clinical Purposes, Tests for Electric Conductivity of Urine. G. Kolischer and L. E. Schmidt, Chicago.
18 *Stricture of the Urethra: Preliminary Note on a Tunneled and Grooved Sound and a Tunneled and Grooved Catheter for Dilatation. V. C. Pedersen, New York.
19 Cystic Kidney and Liver. H. A. Reque, Chicago.

15. **Galvanism in Neurology.**—Pritchard is convinced of the efficacy of galvanism in neurology, though it is by no means indiscriminately applicable. On the contrary, its field is relatively limited, and it has no place as yet in the numerical majority of neurologic cases, or, if a place at all, only as an aid in some collateral way to the end desired. In the field of peripheral nerve diseases, including many of the neuroses, nearly all forms of neuritis, the tics, vasomotor and trophic affections, and the paresthesiæ of whatever cause, galvanism occupies a position of positive and indispensable importance. The fatigue psychoses, the headaches and cerebral conditions underlying the obsessions of neurasthenia, and of simple affective melancholia, are really the field of selective usefulness for this agent. Even in this field of selection, however, galvanism is rarely, if ever, a specific. To get the best results, it is necessary to have a proper equipment and to know how to use it.

16. **Appendicitis.**—Kime says that the average surgeon will save more lives by operating only in the severe cases of appendicitis within the first forty-eight hours and in those in which the patients suddenly grow worse after a few days of improvement; doing the interval operation on all patients who do not completely recover from first attack and in relapsing cases. Internal treatment properly conducted should have a death rate of not over from 2 to 5 per cent. The death rate can be reduced nearest to zero by the average surgeon doing the interval operation on those patients who do not fully recover or who have relapses, and operating in the severe cases within from twenty-four to forty-eight hours and in those that suddenly grow worse after a few days of improvement, leaving the remainder of the cases to judicious medical treatment. There is also a field for medical treatment in many cases after the appendix has been removed in correcting the original cause of appendicitis or looking after existing complications. The surgeon should not dogmatically assert that appendicitis has no medical treatment, nor decry or exclude judicious medical treatment in these cases; neither should the general practitioner exclude the surgeon, but each should assist the other.

18. **Stricture of Urethra.**—Pedersen calls attention to a tunnelled and grooved sound and catheter devised by him. The curve of the sound is of the same radius as the standard urethral sound, but one inch shorter. This decrease in length has been compensated for by an increase of one inch in the length of the shank. The object and advantage of the short curve lie in the fact that there is very much less leverage on the face of a stricture in a short curve than in a long curve, thus the danger of injuring the filiform and of making false passages in the urethra is greatly decreased. The taper of the curve is uniform from its base to its tip and regularly includes six sizes from No. 12 F. upward. The smallest point of the instrument is made 6 F. for the reason that this is the size of the Maisonneuve instrument. The small sizes, therefore, below 12 F. are uniformly at the tip No. 6 F. and regularly taper upward as follows: Two sizes for 8 F., three sizes for 9 F., four sizes for 10 F. and five sizes for 11 F. The uniformity of the taper has the object of rendering the dilatation much more secure on the following grounds: The middle of the curve of the 21 F. sound, for example, is 18 F., while the sizes 19 and 20 F. occur at equal distances between the middle of the curve and the full size of the shank. If, therefore, a No. 20 F. sound has already been passed through the stricture, the beak of a 21 F. sound will be almost entirely through the same stricture before the dilating begins. The safety of this plan is obvious and becomes much more important when, for any reason, the dilating is being done more rapidly than one size at a time. The tunnel of the sound is one-third larger in diameter than the diameter of a small filiform and is five-eighths of an inch long. These dimensions are uniform throughout the set of sounds, thus securing entire uniformity of action and correcting the mistake in the standard tunneled sound by which the tunnels in the upper sizes are so large as to permit an inconvenient amount of play over the filiform. The length of

the tunnel secures the sounds from twisting, buckling, breaking or cutting the filiforms, accidents which are not infrequent in the standard instrument. The length, however, is not sufficient to cause binding of the sound on the filiform, provided ordinary skill is employed. The groove of the sound passes along the shank three-quarters of the length thereof, thus insuring ease of testing the freedom of the filiform. The grooves, like the tunnels, are also of the same size and length throughout the set. There is no reason whatever for increasing the width and depth thereof as the size of the sounds advances, thus the inconvenient dipping of the mucous membrane into a wide groove in a large sound is largely corrected and consequent pain to the patient avoided. The tunneled and grooved silver catheter alluded to in the title are designed in the same manner, namely: With a short curve of uniform taper of six sizes, a shank one inch longer than the standard, tunnels of uniform diameter, five-eighths of an inch long, and grooves of uniform length, depth and width throughout the series. The set which the author has employed consists of a 6 F., 12 F. and 18 F., tunneled and grooved catheter and sounds of all numbers from 8 to 20 F., both inclusive, also 22 and 24 F. The ordinary practitioner can do perfectly good work with catheters 6 and 12 F. and the even numbered sounds from 8 to 20 F., both inclusive. Only the specialist who is certain to encounter difficult cases frequently needs every size of sound. The technic of employing these instruments is as follows: After the filiform has been inserted in the usual manner, the 6 F. catheter is passed over the filiform, the bladder, if distended, is partially evacuated through the silver catheter or, if empty, is moderately filled with any mild antiseptic solution, such as boric acid, permanganate of potash, Thiersch or silver nitrate solution. The catheter is then removed, leaving the filiform *in situ*, and the sounds are taken in order, beginning with 8 F., and gently passed over the filiform through the stricture until that size is reached which the patient states to be moderately painful. Pedersen finds that, as a rule, most strictures may be thus dilated to about 10 F. with very little inconvenience to the patient. The sound is then left *in situ* for ten or fifteen minutes in order to get the full benefit of the dilatation. After this the filiform and sound are removed and the patient is allowed to evacuate the contents of his bladder. If the contents of the bladder be urine, as in cases of distention, the sound is removed and the filiform is left in place, and the silver catheter is then again passed and the bladder carefully washed with rather hot antiseptic fluid, some of which is left in the bladder to prevent bleeding, such as sometimes occurs when an overdistended bladder is emptied. After four or five days the patient returns for the passing of larger sounds. Usually in from four to six weeks dilatation is carried to the point where a filiform becomes unnecessary. A very few strictures are so tortuous and deeply seated that tunneled and grooved sounds 22 and 24 F. should be passed over a filiform before use of the latter is abandoned.

New York Medical Journal.

August 5.

20 Recent Advances in Surgery. H. Lillienthal, New York.
21 *Recurrent Tuberculous Peritonitis After Incomplete Operation, with Report of Case Treated by X-Rays. J. B. Shober, Philadelphia.
22 *Treatment of Pott's Disease, and of Rotary Lateral Curvature, by the Plaster-of-Paris Jacket and the Aluminum Corset. C. Ogilvy, New York.
23 *Management of Summer Diarrhea in Infants and Young Children. Observations Based on 5,000 Cases in Private and Dispensary Practice. E. M. Sill, New York.
24 The Premature Infant. D. H. Sherman, Buffalo, N. Y.
25 Case of Foreign Body in the Rectum. C. S. White, Washington, D. C.
26 Significance of Sudden, Severe, Abdominal Pain. E. A. Babler, St. Louis.
27 Suggestions in Treatment of Wounds. H. D. Collins, New York.

21. **Tuberculous Peritonitis.**—As the result of personal experience and a study of the literature, Shober concludes that until we have more precise methods of differentiation most patients with tuberculous peritonitis will be operated on under some other diagnosis. Celiotomy and removal of the primary focus of the disease offers the best prospect of cure. The abdomen should be thoroughly irrigated and closed without drainage. A short course of *x*-ray treatment immediately following operation is advisable in all cases, but it is especially important in those cases in which the primary focus has not been removed. Should recurrence take place in these cases, a secondary operation—to remove, if possible, the primary focus—is advisable; and this operation should be followed by a course of *x*-ray treatment.

22. **Aluminum Corset in Pott's Disease.**—Ogilvy favors the aluminum corset, made from sheet aluminum of various thicknesses. To make an aluminum corset, a plaster of Paris cast of the body is taken. This is made exactly as is a plaster of Paris corset, except that the trimming of the upper and lower edges is omitted. Around this, after it has been removed from the body, an additional bandage is tightly wound, from top to bottom, drawing it closely together. This is then filled in with soft setting plaster of Paris. The outer cast of bandages is then removed and the model obtained over which the aluminum is molded. The hammering of the aluminum, in working it up to fit the model, so tempers it as to make it almost as durable as steel. It is made in two halves, which are swung from behind on two double-hinged joints. It is then perforated and polished. This makes not only a light, durable, comfortable and firm support, but also one which can be easily remodeled from time to time as occasion requires, and for this reason particularly is it of the greatest usefulness in spinal curvature, for it allows us to keep up a firm, even, constant pressure against the deformity without pain or discomfort. Before the cast for a corset is made, the rigidity and spasm of muscle, if present, should be as much as possible relieved to obtain a better correction of the deformity. This may be accomplished by manipulation and extension, which should be employed for several weeks, if necessary, previous to the application of the corset. The results obtained by the use of the aluminum corset with corrective exercises are these: Not only are the general development, health and muscle tone much improved, but the deformity is arrested, and to some extent—in some cases to a very great extent—corrected.

23. **Management of Summer Diarrheas in Children.**—Sill summarizes his views as follows: First, absolute rest for the inflamed mucous membrane of the stomach and intestines, attained by stopping all food and giving nothing but water; second, eliminate the cause—namely, a foreign substance which is causing irritation, as fermenting or indigestible food, this being done by the use of castor oil or calomel; third, success lies in the mode of gradually increasing the strength and quality of milk, beginning in all cases irrespective of the age up to a year with a very weak cream mixture.

Boston Medical and Surgical Journal.

August 3.

28 *Influence which the Acquisition of Tropical Territory by the United States Has Had., and Is Likely to Have, on American Medicine. G. Blumer, San Francisco.
29 Case Illustrating the Local Conditions After a Suprapubic Enucleation of the Prostate. A. L. Chute, Boston.
30 Observations on the Treatment of Epilepsy. D. R. Brower, Chicago.
31 Dietary in Epilepsy. L. P. Clark, New York.
32 Photography of Gross Specimens. M. D. Miller, Cambridge.

28.—See The Journal, July 15, 1905, page 169.

Lancet-Clinic, Cincinnati, Ohio.

August 5.

33 Conservative Treatment of Pelvic Diseases in Women. H. F. Lewis, Chicago.
34 *Strictures of the Male Urethra. A. Ravogli, Cincinnati.

St. Louis Medical Review.

July 29.

35 Antitetanic Serum in Gunshot Wounds. H. J. Scherck, St. Louis.
36 Curiosities of Ancient Japanese Medicine. J. Knott, Dublin, Ireland.

August 5.

37 Law of Consent in Regard to Operations. A. N. Taylor, New York.

34.—See abstract in The Journal, Nov. 5, 1904, page 1409.

FOREIGN.

Titles marked with an asterisk (*) are abstracted below. Clinical lectures, single case reports and trials of new drugs and artificial foods are omitted unless of exceptional general interest.

British Medical Journal.

July 22.

1 Relation of Medical Men to Official and Public Bodies. R. Maclaren.
2 *The Opsonic Power of People Suffering from Tuberculosis. R. H. Urwick.

3 Incidence of the Hair's Greyness. G. L. Cheatle.
4 *Perception of Light and Color. F. W. Edridge-Green.
5 Royal College [illegible]; Its Early Connection with [illegible] Johnston.
6 Report of Speci[illegible]

2. **Opsonic Power of the Tuberculous.**—Urwick studied the opsonic power of the blood of 54 people suffering from various tuberculous affections, employing the method described by Wright, and found that this power may be either high or low. A low power is due to an inherent deficiency or to an exhaustion of the machinery of immunization. A high power is due to an active response by the machinery of immunization to the stimulus of infection. This power in the tuberculous varies from day to day, and the curve thus produced shows in many cases negative and positive phases following autoinoculation. The opsonic power of healthy people is nearly the same and does not vary from day to day.

4. **Perception of Light and Color.**—Edridge-Green attempts to show how his theory of light and color perception explains known facts of light and color vision. He assumes that light falling on the eye liberates the visual purple from the rods and a photograph is formed. The decomposition of the visual purple by light chemically stimulates the ends of the cones and a visual impulse is set up which is conveyed through the optic nerve fibers to the brain. These visual impulses probably differ in character according to the wave length of the light causing them. The author has examined the retina of several monkeys after they have been kept in a dark room and found that the visual purple was in the yellow spot between the cones. He discusses the evolution of the color sense, color blindness, color mixing, color vision of the periphery and of the retina, and color contrast.

The Lancet, London.

July 22.

7 Hemomanometry in Man. G. Oliver.
8 Neuroses of Early Life. H. Ashby.
9 *Influence of Feeding on the Mortality of Infants. W. J. Howarth.
10 [illegible] the Descending Process of Adolescents. G. H. Makins.
11 * [illegible] rovertebral Triangle as a [illegible] and Estimation of Pleural [illegible]
12 [illegible] ondroplasia. H. M. Joseph.
13 * [illegible] rtain Fruits. J. G. Sharp.
14 *Oral Sepsis as a Cause of Iritis. E. K. Campbell.

9. **Influence of Feeding on Infant Mortality.**—Howarth has investigated this question in the case of 8,348 children, 63.3 per cent. of whom were breast fed, 19.5 per cent. hand fed and 17.3 per cent. breast fed at first and afterward hand fed, or partly breast fed and partly hand fed. The highest death rate (197.5) was observed among the hand fed children. It was nearly three times that recorded among breast-fed children (69.8), and twice that of children reared partly by hand and partly naturally (98.7). Among hand-fed children, diarrheal diseases and deaths from defective nutrition prevailed. Next in importance are chest ailments and then convulsions due to disorders of digestion. Among breast-fed children the most common causes of death are bronchitis, pneumonia and convulsions. Among children who were first breast fed and subsequently hand fed the death rate is not so high as among the purely hand fed, although the aggregate mortality is considerably higher than that of breast-fed children; in one or two diseases the mortality is lower. This result obviously points to the advantages which accrue to children who have natural food supplemented by artificial food rather than an entire supply of the latter. Children fed on condensed milk show a very high mortality, 255 deaths per 1,000 children. Next come the children reared on bread, rusks, arrowroot and other farinaceous foods, 252 per 1,000. The deductions made by Howarth are as follows: The use of sweetened condensed milk, either whole or skimmed, invariably should be discouraged and whole unsweetened condensed milk only should be permitted when one is satisfied that the milk is being used with a proper degree of dilution and with the necessary additions as in the case of modified cows' milk; also that since the death rate among children reared on patent foods is, on the average, higher than among those fed on diluted cows' milk, every attempt should be made to encourage parents to use this latter food and to educate them to an appreciation of the necessity for the additions to, and the dilution of, cows' milk to render it suitable for infant's food. The addition of patent foods to the dietary of very young infants is unnecessary, sometimes dangerous, and always expensive. Furthermore, it must not be forgotten that the risks to which hand-fed children are exposed are considerably minimized by mixed feeding and that, therefore, every mother who is unable fully to satisfy her infant should be encouraged to continue to feed her child and to supplement any deficiency by means of artificial food, and that only in case of absolute necessity should resort be had to artificial feeding alone.

11. **Practical Value of Grocco's Paravertebral Triangle in Pleural Effusions.**—Ewart recommends observance of this sign in cases in which the size of the pleural effusion is less than a fifth of that of the pleura. Whenever fluid collects within a free pleura, a paravertebral patch of partial dullness, triangular in outline, is obtainable in the other, the "dry," pleura. The crucial proof employed to test the genuineness of the trianguar dullness is its disappearance when the patient assumes the lateral decubitus on the side of the effusion, and its reappearance immediately he sits up or turns on to the sound side. This is at the same time a demonstration of the significance of the dullness, and is sufficient proof that its production is due to the influence of a mobile fluid. When, however, the pleura is overdistended, the mobility of the fluid is much reduced. The complete disappearance of Grocco's triangle does not then seem to occur, but the height of the triangle becomes much less with the change to the lateral posture. If there is no Grocco triangle of dullness there can be no free effusion in the chest. The extent of the effusion can also be determined by this sign; for, whereas the base of the triangle, corresponding in position to the twelfth rib and to the pleural sinus, varies only slightly with the bulk of different effusions, the length of the vertical side of the triangle varies exactly with the upper limit of the effusion.

13. **Digestive and Other Actions of Fruits.**—In this article Sharp shows that many common fruits contain ferments which play the part of papain and bromelin (ferment of pineapple), and that they can digest both egg and serum albumin to some limited extent. The fruits experimented with were strawberries, cherries, oranges, pears and apples. To obtain most benefit from the succulent fruits they should be eaten at the end of the chief meal. Stewed fruit, as a stimulant to the lethargic gut in constipation, should be eaten half an hour before breakfast. Oranges, if peeled and cut into thin slices and with castor sugar strewn over them, are highly efficacious as an aid to digestion. Grapes should only be eaten at the end of the chief meal of the day.

14. **Oral Sepsis as a Cause of Iritis.**—Campbell urges that the constitutional treatment of iritis should be directed to the removal of oral sepsis, for although about 50 per cent. of cases of iritis are undoubtedly due to syphilis, there is even here the possibility of a mixed infection. He has seen three cases of iritis in which there was an absolutely negative history of either syphilis or rheumatism in any shape or form, but in all three there was marked evidence of oral sepsis. The teeth were scaled, filled or extracted, suppurating pockets were purified and the mouth was rendered as pure as possible. This, combined with the use of mydriatics and tonics, cured all three patients rapidly.

Glasgow Medical Journal.

July.

15 *Secondary Operation for Complete Rupture of the Perineum. C. J. Cullingworth.
16 Enlargement of the Spleen and Liver in a Child, the Second Case in the Same Family: Splenic Anemia or Banti's Disease. J. L. Steven.
17 Movable Displacement of the Kidney. D. Newman.
18 Treatment of Endometritis. J. K. Kelly.

15. **Secondary Perineorrhaphy.**—Cullingworth describes a secondary operation for complete rupture of the perineum which he has employed for many years. The operation appears to be a modification of Lawson Tait's. Having made lateral traction with the fingers on each side of the anus so as to efface the appearance of a triangle, forming a single, tense, transverse white line, Cullingworth plunges one blade of a pair of angular scissors deeply into the tissues of the rectovaginal septum at the left extremity of this white line,

dividing the septum into two layers from one end of the white line to the other. From each extremity of this first incision a cut is made, running forward, and another running backward, the whole series of incisions representing the letter H. The forward incisions will mark the outer boundaries of the vaginal flap, and their length will determine the length of the new perineum. It will generally suffice for these incisions (which are carried along the line at the sides of the vulva where skin and mucous membrane meet, or, to be more exact, where the skin alters in character) to be made to terminate where scar tissue ends, i. e., where the original perineum ended. If this is difficult to recognize, it will usually be safe to let them terminate where the labia minora commence. The two backward cuts are much shorter. Their object is to facilitate (1) the exposure and (2) the union of the divided ends of the sphincter. The completion of the vaginal flap may be accomplished either with the scissors or with the knife, the left forefinger being on guard in the vagina. The line of reflection of the flap should be nearly horizontal, and should extend completely across from the anterior end of one lateral incision to the anterior end of the other. Lateral traction is now removed, when the triangular shape of the gap in the torn anterior wall of the rectum again becomes apparent. This gap will be represented in the flap which has been dissected up. Care must be taken not to carry the anterior border of the new perineum far forward. The first suture passed is the buried perineal suture. The perineal needle is introduced into the skin about one-sixth of an inch from the margin of the denuded surface at a point immediately below the angle of reflection of the vaginal flap. It is passed completely round from one side to the other in the substance of the rectovaginal septum just above the line of reflection of the flap, and the point is made to emerge on the right side at a spot corresponding to the aperture of entrance on the left side. The needle should not, during its course, make its appearance either in the rectum, in the vagina or in the wound. The suture should be a buried suture throughout. Its use is to brace up the whole perineum and to prevent spaces being left in the deeper part of the wound, where the raw surfaces are not in contact, and in which fluids can accumulate. In cases in which no such spaces seem likely to occur, the buried suture may be dispensed with. When the needle has been successfully passed the eye is threaded with a stout silkworm-gut suture and the needle is withdrawn, the suture being left in position but not tied. The rectal tear is now sutured from above downward, the sutures being introduced by means of a full-curved needle, held in a firm needle-holder, at the edge of the rectal mucous membrane on one side of the rent. The point of the needle is brought out on the denuded surface at a point distant about half an inch from the point of entrance, in order to insure the inclusion in the stitch of a sufficient amount of tissue. It is then carried across to enter at a corresponding point in the raw surface of the opposite side, and to emerge at the margin of the rectal mucous membrane at a point exactly opposite the original point of entrance. The needle being now removed, the suture is tied and the ends are dropped into the rectum before the next suture is introduced. Two, three or four other sutures, according to the requirements of the case, are then introduced in the same manner, care being taken that the ends of each suture, as it is tied, are dropped into the rectum and kept back out of the way. Cullingworth always uses catgut for the rectal sutures, so that it may not be necessary to disturb the parts for their removal. When all have been introduced and tied, and not before, the ends may be cut off at the anus. The vaginal side of the laceration is now closed by means of a series of interrupted sutures of silkworm gut, the ends of which are left long so that they can be loosely tied together and turned into the vagina, whence they can be easily withdrawn for removal. The remaining perineal sutures, stout silkworm gut, are introduced through the skin at the same distance from the edge as in the case of the buried suture, about one-sixth of an inch. These sutures are made to pass deeply, and they remain almost, but not completely, buried. They cross from one raw surface to the other at the deepest part of the wound, and emerge at a point on the skin of the opposite side exactly corresponding in position to the point of entrance. The number required varies; usually it is three or four. Cullingworth generally passes them in order from before backward, leaving them untied until all have been passed. The tying is done in reverse order, viz., the hindmost first. This hindmost stitch should bring together the ends of the anus. Immediately before the perineal stitches are tied the wound receives a final irrigation and cleansing. The closure of the perineal wound will have the effect of completing the folding on itself of the vaginal flap, and the edges of the flap should be united by interrupted silkworm-gut sutures, continuing forward, as it were, the row of perineal sutures, but not passing them so deeply. Now is the time to introduce any superficial sutures that may be required in order to bring the edges of the skin neatly together. Sometimes no such sutures are required; sometimes three or four. Cullingworth is in the habit of leaving the ends of the perineal sutures long and tying them loosely together in a bunch. The advantages of this are as follows: 1, It adds to the patient's comfort by avoiding the pricking of the skin by the ends of the sutures, which almost always happens when they are cut off short; 2, if any dressings are necessary they can be applied much more easily than when the sutures are cut short; 3, it greatly facilitates the removal of the sutures, for, when the time comes for this to be done, the sheaf is untied and each suture in turn is slightly pulled on by means of its long ends, so that the knot can be easily made visible and the suture divided. The less elaborate the dressing of the newly-repaired perineum the better. Two little strips of lint, three inches long by three-quarters of an inch wide, anointed with vaselin and laid parallel with each other on each side of the wound, are all that is required. When the thighs, now flexed on the abdomen, come to lie in their natural position, these two bits of lint will be found to have their unanointed surfaces in contact, the bunch of perineal sutures projecting between them. It is quite obvious that the less interference there is with the newly united parts the better. Vaginal douching should be ordered only when there is a purulent or offensive discharge. Otherwise the internal parts should be kept clean by means of wool sponges and warm water. This local cleansing and changing of dressings can be done with least disturbance of the patient by flexing the legs on the thighs and the thighs on the abdomen in such a way as to afford a full view of the wound. If the patient can not, by grasping each leg under the knee, hold the limbs sufficiently out of the way for the nurse's purpose, the nurse should have an assistant support the heels of the patient while the wound is being attended to. The catheter is usually required for the first two or three days. As soon as the patient is able to dispense with the catheter she should do so. The patient must remain in the recumbent posture absolutely for at least fourteen days. A full dose of castor oil is administered sixty hours after the operation. If it has not acted in four hours the dose should be repeated. The perineal stitches are removed on the eighth day.

Books Received

Acknowledgment of all books received will be made in this column and this will be deemed by us a full equivalent to those sending them. A selection from these volumes will be made for review, as dictated by their merits, or in the interests of our readers.

INTERNATIONAL CLINICS. A Quarterly of Illustrated Clinical Lectures and Especially Prepared Original Articles on Treatment, Medicine, Surgery, Neurol[illegible] Gynecology, Orthopedics, Pathology, [illegible] Otology, Rhinology, Laryngology, [illegible] of Interest to Students and Practitioners by Leading Members of the Medical Profession [illegible] World. Edited by A. O. J. Kelly, A.M., M.D., with [illegible] Drs. Wm. Osler, J. H. Musser, J. Stewart, J. [illegible] nedran, T. M. Rotch, J. G. Clark, J. J. Wals.., [illegible] J. Harold, E. Landolt, and R. Kretz. Vol. II. Fifteen series. Cloth. Pp. 310. Price, $2.00. Philadelphia: J. B. Lippincott Co. 1905.

PSYCHIC TREATMENT OF NERVOUS DISEASES. P. DuBois. Translated and edited by S. E. Jelliffe, M.D., Ph.D., and W. A. White, M.D. Cloth. Pp. 466. Price, $3.00 net. New York: Funk & Wagnalls Co. 1905.

SUPERSTITION IN MEDICINE. H. Magnus. Authorized translation from the German. Edited by J. L. Salinger. Cloth. Pp. 205. Price, $1.00 net. New York: Funk & Wagnalls Co., 1905.

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Original Articles

A CONSIDERATION OF THE ETIOLOGY AND DIETETIC TREATMENT OF INFANTILE ATROPHY.

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INTRODUCTION.

The condition known as infantile atrophy, athrepsia, or marasmus occurs so frequently and its consequences are so serious that it is of the utmost importance to obtain accurate knowledge of its pathology and nature, in the hope that such knowledge may furnish indications for treatment. The clinical manifestations have been described so many times that it is unnecessary to refer to them here, more especially as any physician in general practice must have seen such cases.

The condition begins, as a rule, in the first two or three months of life, and is caused by errors in the diet. It may be that the quantity of food is excessive, that the quality of the food is unsuitable, or that the food is given too frequently. As a rule, one finds a combination of several errors. In consequence of faulty diet, the digestion, as is shown by the character of the dejections, becomes impaired. The infant does not gain in weight as it should. In most cases there is a loss of weight down to a certain point, and after this the weight may remain more or less stationary for weeks or for months. A distinction has been made between these so-called primary cases, which occur in the first few weeks of life, and cases presenting the same symptoms and following the same course, which begin later in infancy in consequence of some acute disease, especially severe acute gastroenteric disturbance. Neither clinically nor anatomically can the cases be distinguished from one another, and there appears to be little reason for classifying them separately. This statement is not meant to include cases in which the emaciation is associated with chronic diseases, like tuberculosis and syphilis.

THEORIES OF CAUSATION.

The way in which a faulty diet produces a condition of atrophy is still unknown. It was assumed by Nothnagel[1] and later by Baginsky[2] that a more or less constant derangement of digestion in these cases ultimately caused atrophy of the intestines; consequently absorption became so much impaired that a general wasting of the body tissues ensued. In support of this view, Baginsky produced drawings illustrative of the microscopic appearances of the intestines in such cases. Heubner[3] denied the correctness of these observations and claimed that the microscopic appearances described by Baginsky were due to postmortem changes and to artefacts. He said that the loss of epithelium was due to postmortem alterations and showed that any obliquity in the cross-sections of intestines produced the appearance of shallower ducts, and that the thinness or thickness of the wall could be modified by the degree of distention or contraction of the intestines. In this way, areas of atrophy and hypertrophy were simulated. He exhibited photographs of sections of normal intestines distended and cut obliquely which were similar to the appearances described by Baginsky in cases of atrophy. Heubner believed that the condition of atrophy was due to severe functional disturbance. Heubner's views were sustained by the work of Gerlach,[4] published about the same time. In Gerlach's cases, a condition similar to that described by Baginsky was produced by means of postmortem alterations and varying degrees of distention and contraction of the intestines. Two years later Habel[5] published the results of investigations of this subject carried on under the supervision of Ribbert. There was scarcely a suggestion of atrophy of the intestines in the cases which he examined, and the results of his experiments on animals confirmed the statements of Heubner and of Gerlach.

Bloch[6] recently published the results obtained by him from the examination of three cases of infantile atrophy. Postmortem changes were avoided by injecting a quantity of 10 per cent. formalin solution into the peritoneal cavity immediately after death. Measurements were made of the stomach and intestines. Great care was exercised in the fixation and handling of the specimens. Serial sections were made of the tissues, and modern methods of staining were employed. There was no evidence of intestinal atrophy. The only abnormality to which he attached any importance was the condition of Paneth's cells. These cells, described by Paneth[7] in 1888, are found in Lieberkuhn's ducts. Under normal conditions, the presence of certain granules in the protoplasm of these cells is accepted as evidence that they are functioning. In Bloch's cases of atrophy the granules in the Paneth cells were, for the most part, absent, and from this Bloch concluded that the cells were not functioning. There was no appearance of degeneration of

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[1] Beiträge zur Physiologie u. Pathologie des Darmes. Berlin, 1884.

[2] A. Baginsky: (cited by Bloch). Die Verdauungs Krankheiten der Kinder. Tübingen, 1884. Zur Kenntniss der atrophie der Sauglinge. Deuts. med. Woch., No. 18, 1899. Zur Pathologie der Darmtraktus. Arch. f. Kinderheilkunde, No. 32, 1901.

[3] O. Heubner: (cited by Bloch), Ueber das Verhalten der Darmepithels bei Darmkrankheiten der Säuglinge, etc., Zeitsch. f. klin. Med., vol. xxix, 1896. Zur Kenntniss der Säuglings-Atrophie. Jahr. f. Kinderheilkunde. vol. liii, 1901.

[4] W. Gerlach: (cited by Bloch). Kritische Bemerkungen zur gegenwärtigen Lehre von der Darmatrophie, Deuts. Arch. f. klin. Med., vol. lvii, 1896.

[5] A. Habel: (cited by Bloch) Ueber Darmatrophie, Virch, Arch. vol. cliii, 1898.

[6] C. E. Bloch: (references to literature of atrophy) Die Säuglings-Atrophie und die Paneth'schen zellen, Jahr. f. Kinderheilkunde, vol. lix, 1904.

[7] Paneth: cited by Bloch) Ueber die secernierenden Zellen des Dünndarmepithels. Arch. f. Mikroskop. Anat., vol xxxi, 1888.

Paneth's cells. Bloch attached great importance to the condition of the cells as a causative factor in the production of infantile atrophy. He referred to Pawlow's work on digestion and the important part which the "succus entericus" plays in assisting pancreatic digestion. Bloch also referred to work previously done by him in which these cells were always found to be normal under a variety of pathologic conditions involving the intestines. He also referred to Paneth's experimental work on animals in which these cells presented no abnormal appearances even after prolonged starvation. Whether or not the condition of Paneth's cells in these cases actually causes the atrophy, he at least feels sure that the condition of these cells is a primary one and is not induced by the atrophy.

Bloch, in describing the liver changes, says that in no case did he find any inflammatory or cirrhotic changes. The acini were distinct and the bile ducts were normal. In two cases the liver cells were normal. In one case, the protoplasmic outlines were not distinct and many of the cells were filled with fat, but the nuclei stained well. Bloch mentioned that Gaston,[6], Lesné[9] and Merklen, and Terrien[10] found severe and extensive lesions of the liver in cases of infantile atrophy. These observations have not been confirmed by other men.

On the whole, therefore, it may be said that there is no convincing evidence of any constant gross or histologic changes in the intestines or liver in infantile atrophy beyond the possible absence of Paneth's granules.

The strongest argument against this theory of intestinal atrophy is furnished by clinical experience. It has been shown many times that when these infants receive a *suitable food* a progressive increase in weight occurs within a few days. Their increase in weight equals or exceeds that of the average normal infant. In atrophic cases, an average gain of seven or more ounces in a week is to be expected until such time as the infant reaches a weight that approximates the normal for its age. It is inconceivable that repair of a serious structural lesion can occur so rapidly or so completely. The only satisfactory explanation for the rapid recovery which occurs when suitable food is procured is that the condition is caused by impaired cell functions and that these functions can be rapidly restored. The nature and situation of the impaired functions have not been determined.

Rubner[11] believes that the condition is caused by impaired intestinal absorption, and states that his experiments furnished no evidence that the metabolic processes were abnormal. It would be more accurate if Rubner said that the absorptive power for cow's milk was impaired, because it has not been shown that there is any impairment of absorption when a suitable food is given.

It is quite possible that there is an intimate connection between the abnormal condition of Paneth's cells and the lessened powers of absorption. Pawlow has shown that the *succus entericus* contains a ferment which he calls enterokinase. He describes it as a "ferment of other ferments," because it acts especially on the proteolytic ferment of the pancreas and increases the latter's activity in a marked degree when certain foods are given. The activity of the amylolytic and fat-splitting ferments of the pancreas is also increased, but to a lesser degree.

These facts, taken in conjunction with the results furnished by a limited number of metabolism observations which invariably have shown diminished intestinal absorption, make it very probable that the impaired intestinal functions are of chief importance in the production of the atrophic condition of the infant.

The assumption that chronic intoxication caused infantile atrophy seemed at one time to offer a plausible explanation of the disease, but up to the present time neither the source, nor the nature, nor the actual occurrence of such an intoxication have been satisfactorily demonstrated.

In 1896, Thiemich[12] published the pathologic findings in the liver in thirty-two cases of gastroenteritis. He did not describe the cases clinically, except to say that they presented manifold appearances. He divided the cases into three classes, depending on the degree of fatty changes present. He believed the fatty changes to be due to a toxin, the source of which could not be determined histologically. Thiemich stated that he did not doubt that such changes as he found must affect the functions of the liver and hoped that the investigations which were being conducted under Czerny's direction would show a connection between the impaired liver functions and cases of infantile atrophy occurring after gastroenteritis.

In 1897 Czerny[13] stated his belief that an excess of cow's milk proteid in the diet of young infants might produce an acid intoxication. He stated that, during the process of hydrolytic decomposition of the cow's milk proteids, an excessive production of acid took place. This necessitated the withdrawal of alkalies from the tissues in order to neutralize the excess of acid, and in this way the liver functions became impaired. In support of this, he referred to the symptoms of intoxication produced in atrophic infants by quantities of cow's milk proteid, which in normal infants produced no symptoms. When the milk proteids were diminished in these cases, the symptoms subsided, but, as the food then contained too little proteid for the body needs, the infant was forced to use up its own tissues. He compared the symptoms thus produced with those which followed the operation of Eck's fistula in dogs, by means of which the portal blood is carried across into the inferior vena cava, and so does not pass through the liver. In such cases, when the dog's diet contains an excess of proteid, severe intoxication symptoms follow, and when the quantity of proteid is reduced the animals emaciate. He believed that in the cases of infants an excess of proteid, together with impaired liver functions, explained the source of intoxication.

This article of Czerny's was the first in a series of six publications which appeared from time to time in the *Jahrbüch für Kinderheilkunde* under the general title *"Zur Kenntniss der Gastroenteritis im Säuglingsalter."* Czerny's article was the first of a series, with the subtitle "Intoxication." This theory of acid intoxication and impaired liver functions furnished the basis for the above-mentioned investigations, which were carried out by men connected with Czerny's clinic. Their results appeared to corroborate Czerny's views. The second paper was written by Keller and appeared under the subtitle *"Ammoniak auscheidung."*[14] Keller found that the quantity of nitrogen excreted in the urine in the form of ammonia was enormously increased in cases of chronic gastroenteritis. He claimed that this showed either that there was more acid in the body fluids than could be neutralized by the fixed alkalies, and, therefore, the ammonia, instead of being converted into urea, was used to neutralize these acids; or else that the urea-forming functions of the liver were impaired. To test this, he administered large amounts of sodium bicarbonate to two patients. He proposed in this way to neutralize any excess of acid present in the body fluids, and if the liver functions were unimpaired he expected to find a diminution of ammonia and a corresponding increase of urea in the urine. He concluded from his results that a condition of acid intoxication was present in these cases.

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[6] Gaston: (cited by Bloch) Thesè Paris. Du Foie Infectieux, 1893.

[9] (cited by Bloch) Etude des Alterations et functions du foie, etc. Rev. des Maladies, de l'Enfance, vol. xix, 1901.

[10] (cited by Bloch) "Altérations hépatique de la gastro-enteritis der Nourriso." Rev. des Maladies de l'Enfance, vol xviii, 1900.

[11] M. Rubner und O. Huebner: Die natürlichen Ernährung eines Säuglings, Zeits. f. Biologie, vol. xxxvi, *1898. Die Künstliche* Ernährung eines normal. u. eines Atrophischen Säuglings, Zeits. f. Biologie, vol. xxxviii, 1899.

[12] Ueber Leberdgeneration bei Gastroenteritis. Ziegler's Beiträge z. Path. Anat., vol. xviii 1900.

[13] *Czerny:* Zur Kenntniss der Gastro Enteritis im Säuglingsalter (I, Intoxication), Jahr. f. Kinderheilkunde, vol. xliv, 1897. (IV. Respirationsstörungen) Jahr. f. Kinderheilk., vol. xiv, 1897.

The third paper in the series alluded to was that of Van den Bergh,[15] entitled, *"Einfluss von Alkalizufuhr auf die Ammoniakauscheidung."* Van den Bergh's investigations were based on the Schroeder-Munzer theory that if an excessive excretion of ammonia in the urine disappeared after the administration of large quantities of sodium bicarbonate it proved that the condition was due to acid intoxication and not to insufficiency of the urea-forming functions of the liver, because the alkaline bicarbonate of soda would not influence liver functions, but would neutralize acid if present.

Van den Bergh gave from two to five grams of bicarbonate of soda in one day to each of five infants with chronic gastroenteritis. Both the total quantity of nitrogen and the quantity of nitrogen in the form of ammonia were determined for several days preceding and following the administration of the soda. The bicarbonate of soda caused either a complete disappearance or a marked diminution in the renal ammonia. This was accepted by Van den Bergh as evidence of an acid intoxication. He omitted to estimate urea in these cases and, therefore, was unable to show that the diminution of ammonia caused a corresponding increase in urea.

The fourth paper of the series, written by Czerny, was entitled *"Respirations störungen."* In this paper Czerny called attention to a type of respiration which occurred just before death in cases of chronic gastroenteritis, and stated that it strongly resembled the type of respiration observed in animals in which an acid intoxication had been produced experimentally.

The fifth paper was written by Czerny and Keller[16] and appeared under the subtitle *"Säurebildung."* A series of experiments were made to determine the effect of variations in the diet on the production of acid within the body in cases of chronic gastroenteritis. In this, as in all their previous observations, they regarded the urinary ammonia as a measure of acid intoxication. They found that changes in the proteid and sugar content of the food produced but little effect on the excretion of urinary ammonia. Changes in the fat content, on the other hand, produced marked effects. A high percentage of fat in the food caused a marked increase in the amount of urinary ammonia. It should be stated that the percentage of fat in the food in these experiments exceeded considerably the quantity usually given to normal infants, namely, from 5.7 per cent. to 8.6 per cent. of fat. These results caused them to modify their views concerning the sources of the acid intoxication, but they continued to believe that pathologic amounts of acid were present in the body fluids of these infants. Their modified belief was that the excessive production of acid was due, in part, to the fat in the food and, in part, to the condition of the infant; i. e., the effect on the infant's metabolism produced by variations in the severity of the gastroenteritis.

The sixth and last paper in the series was by Keller and appeared under the subtitle *"Einfluss der Zufuhr von Ammoniaksalzen auf die Harnstoff auscheidung."* The purpose of this work was to determine whether or not the urea-forming function of the liver was impaired in cases of chronic gastroenteritis. Thus far, in this series of experiments, the liver functions had not been investigated. Keller administered ammonium carbonate to six infants with chronic gastroenteritis. He assumed that if the urea-forming functions of the liver were unimpaired, the carbonate of ammonia would be converted into urea and excreted in the urine. He found a marked increase in the total nitrogen and urea on the day that ammonium carbonate was given, which showed that the ammonia was absorbed. In two cases, the ammonia in the urine was lessened rather than increased, and in one case was slightly increased. Keller attached no importance to this, but concluded that the urea-forming function was unimpaired in these cases. These results were regarded as confirmatory evidence of the correctness of Czerny's theory of acid intoxication.

This work of Czerny and his associates was severely criticized by Pfaundler[17] about three years later. Pfaundler showed conclusively that some of the chemical methods employed were faulty; that many of the results were incorrectly interpreted, and that the collective results of the investigation neither proved nor disproved the presence of an acid intoxication in cases of chronic gastroenteritis. It is now known that abnormal acids (oxybutyric, diacetic, acetone) are present in the urine in cases of acid intoxication. These acids have not been found in the urine from cases of chronic gastroenteritis. In addition to this, much of the work of Czerny and his associates was based on the generally accepted theory of Hallervorden, that an excess of ammonia in the urine is always an indication of excessive acid production in the organism. Hallervorden believed that the injurious action of the acid on the tissues was averted by a combination of the acid with ammonia at the expense of the urea formation, and the excess of ammonia in the urine was regarded as a measure of the degree of acid intoxication present. This theory has been disproved.

Pfaundler denied that the type of respiration described by Czerny was characteristic of cases of acid intoxication, and said that the type of respiration described was not even peculiar to chronic gastroenteritis. He referred to the work of Van den Bergh as the weakest of Czerny's arguments in favor of acid intoxication and showed that Schroeder and Munzer's theory, on which Van den Bergh's work was based, was incorrect. It was assumed that the administration of large amounts of alkali had no effect other than to neutralize acid that might be present in the body, and in this way diminish the ammonia and increase correspondingly the urea in the urine. In three of Van den Bergh's five cases the total nitrogen in the urine was markedly diminished. It has been shown that excessive amounts of alkalies diminish the nitrogen excretion in the urine. A satisfactory explanation for this could not be given at the time Van den Bergh did his work.

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[14] Jahr. f. Kin. Verh., vol. xliv, 1897.

[15] Jahrb. f. Kinderheilk, vol. xlv, 1897.

[16] Czerny und A. Keller: (V, Säurebildung), Jahr. f. Kinderheilk., vol. xlv, 1897.

[17] M. Pfaundler: Ueber Stoffwechsel Störungen bei Magen-darm-Kranken Säuglingen. Jahrb. f. Kinderheilk., vol. liv, 1901.

Pfaundler also pointed out that the diminution of ammonia in the urine corresponded to the degree of alkalinity of the urine caused by the bicarbonate of soda and explained why the estimation of ammonia in alkaline urine by Schlösing's method is inaccurate. Referring to the incorrectness of the Schroeder-Munzer theory, Pfaundler said that when fixed alkalies are administered they combine with the acid constituents of the urine and form secondary and tertiary phosphates. When ammonia gas or a solution of ammonia is added to a solution containing tertiary alkaline phosphates, no chemical reaction takes place. The chemical affinities are already satisfied, and the ammonia remains uncombined in the solution and escapes into the air in a short time. In solutions containing secondary alkaline phosphates the conditions are more favorable for the ammonia to combine. A urine that contains only secondary and tertiary alkaline phosphates, and from the presence of these reacts alkaline, can not combine to form a stable compound with ammonia.

Pfaundler thinks that the nitrogen may escape through the skin and lungs in such a case. He referred to Keller's experiment, in which he administered ammonium carbonate to test the urea-forming function of the liver, and shows that the results were not conclusive. A portion of the ammonia administered was not accounted for in the urine, and the quantity of ammonia in the feces was not determined, so there was no data to show what the absorptive power of the intestines was for ammonia, and no control observations were made on normal cases. It is not permissible to assume that the administration of an injurious substance like ammonia would produce no alterations in the metabolism.

Pfaundler referred to another source of urea which was not considered by Keller, namely, amido acids present in the diet (malz suppe) of these infants. The formation of urea from amido acids is not a function of the liver, so that other organs besides the liver must have taken part in the urea formation in these cases. In three of the observations, the increase in urea exceeded the increase in total nitrogen after giving the ammonia, showing that there was some other source for part of the urea than that of the liver alone. Pfaundler further stated that the method which was used to determine urea is not an accurate one when large quantities of amido acid and derivatives are present. He concluded that these results failed to prove that the urea-forming function of the liver was intact in such cases. He then criticized the investigations of Keller, in which he determined the quantity of ammonia in the urine in cases of chronic gastroenteritis and found Keller's figures much too high. This he attributed, in part, to the formation of ammonia in the urine on standing, and, in part, to the effect of the diet. He called attention to the extraordinary fluctuation in ammonia excretion in the course of from twenty-four to forty-eight hours without any evident explanation and with no change in symptoms. In this connection he referred to an observation made by Bendix that if the renal ammonia is a measure of acid intoxication, then very large amounts of ammonia should indicate severe cases of intoxication. Neither Bendix nor Pfaundler could detect differences in the general condition of these infants which corresponded to the amount of urinary ammonia. It was admitted by Czerny and Keller that the diet was of importance in this respect.

In addition to his criticism of these investigations, Pfaundler controlled the results, to some extent, by very carefully conducted observations on forty infants and children. These included infants whose digestions were normal and infants with chronic gastroenteritis. Some of these infants were breast-fed. He found that the urinary ammonia in the first half-year of life was much higher than at other ages. On the average, both normal and abnormal digestions were 15.88 per cent. These results were obtained in perfectly fresh specimens of urine.

With digestion normal..........	15.00 per cent.
With digestion abnormal........	16.30 per cent.
A good general condition........	13.77 per cent.
A bad general condition.........	17.10 per cent.

In a small number of cases examined in the second half-year the average was 6.28 per cent. He found little variation in the amount of urinary ammonia from day to day when the diet remained the same. Increase in the fat when artificial food was given increased the ammonia to some extent. He did not give such high percentages of fat as Keller. (Such high percentages of fat would not be tolerated for long periods by healthy infants.) Pfaundler could detect very little difference in the ammonia excretion between infants with normal and those with abnormal digestion, following alterations in the percentage of fat in the food. He showed that a physiologic hyperacidity is present in the tissues of artificially fed infants whose food contains an excessive quantity of fat. This is the condition described by Naunyn as acidosis and is not to be confounded with acid intoxication, which is necessarily an injurious condition.

Pfaundler estimated the amount of urea and amido acids and found that in the first half-year the average percentage of urea nitrogen to the total nitrogen was 55.94 per cent. in infants with normal digestion and 47.08 per cent. in infants with digestive disturbances. These figures are lower than those usually given for this age. In the second half-year, the average percentage of urea nitrogen to total nitrogen was 76.53 per cent. He found in the first half-year an average of 12.01 per cent. of the total nitrogen represented by oxyproteic acid, amido acids and, perhaps, other substances. This is much more than occurs in adult urine. The urine content of urea showed an alternating relationship between the urea, the ammonia and the amido group. In conclusion, Pfaundler referred to the work of Jacoby and others on oxidative ferments of the liver and gave his own results obtained from the examination of seventeen livers. In nine cases in which the livers appeared to be normal histologically, he found the average oxidative power to be about three times as much as that of eight cases in which the livers showed evidences of severe parenchymatous or fatty changes. He remarked that this was the more surprising, because in the cases of adults and of animals marked parenchymatous changes in the liver do not cause such impairment of function that it can be detected by metabolic investigation. He suggested the possibility that in adults there is greater reserve power or that other organs may act vicariously. In twelve of these cases, he had examined the urine during life and found that ten of them showed an alternating relationship between the quantity of urinary ammonia and the oxidative power of the liver. When the amount of urinary ammonia was above the average, the oxidative power of the liver was less than the average and *vice versa.* He admitted that these results required verification, but believed that if they could be substantiated they would have an important bearing on the nitrogen distribution in the urine and might throw light on many obscure metabolic disturbances.

Pfaundler gave the following summary: 1. The ammonia coefficient (percentage of ammonia nitrogen to total nitrogen in the urine) is decidedly higher in the urines of both normal and abnormal infants than in the urine of adults, but not so high as Keller found nor are the variations so extreme.

2. This relative increase in renal ammonia is dependent, in part, on the high fat content of the food and, perhaps, in part, on a deficient oxidative function of the liver and tissues.

3. Ammonia coefficient above the normal occurs (a) when the liver cells are diseased (extreme fatty changes;); (b) when, for any reason, the general condition is much impaired, accompanied by circulatory and respiratory disturbances. Such a condition is frequently observed before death and is not more commonly associated with digestive disturbances than with other severe disorders; (c) when artificial food contains much fat.

4. The importance of this increased ammonia excretion depends on the cause. In a and b the increase of ammonia occurs because the oxidative synthesis to urea is interfered with. In one case the liver functions are impaired; in the other case oxygen is not supplied in sufficient quantities to the tissues or else is not taken up by them. In c the ammonia accompanies acid metabolic products which prevent its synthesis to urea and this constitutes so-called alimentary acidosis.

5. The hypothesis of Czerny and Keller that chronic gastrointestinal disease in infancy causes an acid intoxication, which in turn injures the metabolic functions and is shown by increased excretion of ammonia in the urine, can not be admitted. Insofar as the increased excretion of urinary ammonia in Keller's experiments was due to relatively large quantities of fat in the food, it constitutes an acidosis, i. e., an increased acidulation of the body fluids, and is not an acid intoxication. This condition can occur in a normal organism under the same circumstances and therefore has nothing to do with the gastrointestinal disease. It can not be proved to cause injury to the organism.

In cases in which the increased excretion of ammonia is not due to large amounts of fat or to faulty composition of the food, it has the appearance of a primary retention of ammonia in the organism, therefore the opposite of an acid intoxication. This may be due to relative or to absolute insufficiency of the oxidative functions of the organism. In one case more ammonia might be produced than the liver and the urea-forming organs could oxidize, and in the other case parenchymatous changes in the liver might impair its urea-forming function.

From the evidence thus presented, it is safe to assume that infantile atrophy is caused by functional impairment. It can not be stated definitely which functions are impaired. All metabolism investigations in cases of infantile atrophy have shown a diminished power of intestinal absorption for cow's milk and for other artificial foods. The impairment of function in this case may have to do with the digestion or with the absorption of the food. I know of no metabolism investigations which show the absorptive powers of atrophic infants for breast milk. It has been demonstrated clinically many times that these infants gain in weight and in every other way with astonishing rapidity when they are fed on breast milk. It is quite possible that they may not absorb the breast milk at first any better than other food, but the organs work more economically and more benefit is derived from the quantity absorbed. Rubner's[7] metabolism observation on a normal breast-fed infant showed that the infant did not absorb well during the observation, at least so far as nitrogen was concerned, and in addition received much less milk than usual. Notwithstanding this, it did not lose in weight. The re-establishment of functions within a few days that may have been seriously impaired for months suggests something besides the mere question of digestibility of food. It is possible that human milk contains ferments that stimulate directly the functions of the digestive glands. Pawlow[18] and his associates have shown that the mechanism of digestion is much more complicated and sensitive than was supposed and that there is great variation in the quantity and quality of the digestive juices dependent on the character of the food. May it not be that the digestive glands of young infants, aside from individual variations, are less adaptable than those of older infants? The gland cells function best when stimulated by human milk. In most young infants the digestive glands can be made to adapt themselves to abnormal conditions insofar as to digest cow's milk or other artificial foods when these foods are carefully adjusted to suit the infant. These same foods when not properly adjusted cause digestive disturbances which, if long continued or of frequent occurrence, result in infantile atrophy. It is not improbable that human milk contains special ferments that stimulate the activity of the digestive glands and that when other foods are given the stimulation is less effective and easily produces a condition of abnormal digestion.

EFFECTS OF DIFFERENT FOODS ON THE ATROPHIC CONDITION.

It will be of practical value to consider the effects of different foods on this condition. It will suffice for purposes of comparison to divide the methods of feeding into three classes, viz., proprietary foods, cow's-milk mixtures, human breast milk.

Proprietary Foods.—Very little need be said about the value of proprietary foods in cases of atrophy. It is not necessary to consider their composition for purposes of comparison. All that is required in this connection is to decide whether any or all of them provide a suitable food for atrophic infants. Their usefulness in this respect can be estimated by the results obtained from their employment. In a majority of cases they prove to be unsuitable. It can not be denied that some cases of atrophy gain rapidly in weight and, to all appearances, thrive on these foods. These good results, however, are of little assistance to the physician as guides to the treatment in similar cases because they appear to follow no definite rule and subsequent attempts with the same food usually result in failure. The physician should be governed in the choice of the infant's food by the requirements of the case. A hit or miss method of feeding does not educate the physician and it is oftentimes disastrous for the patient. Almost every case of infantile atrophy that is brought to the specialist for treatment gives the history of the use of several proprietary foods. In many cases a temporary improvement follows the use of each one. The improvement is usually of short duration and then another food is tried. These histories furnish a commentary on this method of feeding.

It should be remembered that other disturbances of nutrition, for example rickets and scurvy, may occur after a prolonged use of these foods.

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[18] J. P. Pawlow: The Work of the Digestive Glands. Translated by W. H. Thompson, London, 1902.

Cow's-Milk Mixtures.—The metabolism observations of Rubner[7] have shown that in order to utilize cow's milk an infant expends much more energy than is the case when breast milk is used. In the observations referred to the excess of energy required for the utilization of cow's milk was shown by a marked increase in the excretion of carbon dioxid and of water. There is comparatively little loss of energy due to muscular activity in young infants, and so this excessive loss is attributed to increased activity of the digestive functions. Rubner states that he believes the entire metabolism is affected in this case and not intestinal absorption alone. Rubner's metabolism investigation of a case of infantile atrophy showed that the infant was not able to digest and to absorb such large quantities of food as a normal infant. The food in this case was a modification of cow's milk with milk sugar. All the metabolism observations that have been made on atrophic infants in which some modification of cow's milk was used have shown a greatly diminished power of absorption for fats and proteids. Heubner[2] says that an atrophic infant requires more calories in its food per kilo weight than a normal infant in order to balance the extra energy lost in the intestines and absorbents during digestion. These observations coincide perfectly with the results obtained by clinical experience. It is generally considered that cases of infantile atrophy digest and gain better on cow's-milk mixtures when the percentages of fat and of proteid are low. This deficiency must be made up to some extent by increasing the carbohydrates; otherwise there is great danger that the mixture will contain too little nourishment for the infant's needs.

The fact that these infants absorb carbohydrates much better than they do fats and proteids probably explains the rapid improvement that sometimes follows the use of condensed milk and proprietary foods. In these preparations there is always a large proportion of carbohydrate material, and when milk is mixed with them it is usually so much diluted that the percentage of fat and proteid is low. By the addition of whey to milk mixtures a larger proportion of lact-albumin, compared to casein, can be obtained. This is desirable in some cases, but in my opinion most of the cases of atrophy that do badly on a cow's-milk mixture which contains a low percentage of proteid and of fat will do the same on a whey mixture. It has been shown that a relatively small quantity of proteid is required to repair tissue waste, so long as this small quantity is protected by a sufficient quantity of fat and carbohydrate. Metabolism observations seem to show that these infants possess the power of retaining proteid material to a greater degree even than average infants; and, in spite of the great loss of nitrogen in the feces, they evidently absorb enough to more than balance the tissue waste. The practical application of these facts in the use of cow's milk in infant feeding was long ago pointed out by Heubner. He thought that it was unwise to overburden the digestive organs with an excess of proteid material, and showed that more energy is required to utilize it, and that excessive amounts of it are or may become detrimental. This is especially true in infantile atrophy. Excessive amounts of cow's-milk proteid require more energy for their utilization; they are not well absorbed and resulting disturbances of function may very well interfere with the absorption and assimilation of the other ingredients of the food.

Atrophic infants cry a great deal more than do normal infants, and this is almost invariably accepted as evidence that they require more food. Further proof of supposed hunger is afforded by the fact that they do not gain in weight. The result is that when these patients are brought to the specialist for treatment he finds that they have been taking larger amounts of food at each feeding than an average infant of the same age would take. The digestive and absorptive powers of these infants are so seriously impaired that their tissues can not derive the needed amount of nourishment from the food which is supplied. When an excessive amount of food is given it defeats its purpose by impairing still more the powers of digestion and of assimilation. The results of treatment substantiate this. A majority of the cases of atrophy that recover on cow's-milk mixtures do so on relatively small quantities of a mixture weak in fat and proteid. The interval between each feeding in these cases should be shorter than for a normal infant of the same age, so that the deficiency in quantity each time is made up by an increased number of feedings. It is rarely necessary for such an interval to be less than two hours. By this means the digestive organs are not unnecessarily overtaxed and absorption is assisted. If improvement follows this method of treatment, it is necessary to keep pace with the improvement by changes in the strength or quantity of the food and by alterations of the intervals. This must be done cautiously to avoid upsets, which often follow imprudent changes in such cases.

With all these precautions, a great many cases of infantile atrophy do badly on mixtures of cow's milk. When this method of feeding succeeds the improvement is almost always slow. The progress is rarely constant. It is frequently interrupted by digestive disturbances and by periods during which there is little or no gain in weight. Under these circumstances a gain of three or four ounces each week may be regarded as encouraging. After a certain degree of improvement has occurred the progress is more rapid, but it is usually a question of several months of treatment before this condition is reached. During this time the milk mixtures have to be adjusted and readjusted many times. A limited number of emaciated infants improve at once on cow's-milk mixtures and gain rapidly in weight. Most of these cases are not, properly speaking, cases of infantile atrophy. Infantile atrophy is always associated with impairment of the digestive and absorptive functions. In the emaciated cases just mentioned the infants have been underfed, as a rule, not so much in quantity as that they have received too weak a food. In some cases, when they receive a more suitable mixture or amount of the cow's milk, they absorb it well and gain at once. These cases are cases of partial starvation and are not true cases of infantile atrophy. I have not relied solely on my own experience in making the above statements regarding cow's-milk mixtures, as any one may verify who cares to look over the literature on the subject. In my opinion, the method of feeding cases of infantile atrophy on cow's-milk mixtures is unsatisfactory in a majority of instances. The infants that do improve on cow's-milk mixtures do so because they have ultimately acquired a power to digest and to absorb this food. That is to say, the child is adapted to the food and not the food to the child.

Breast Milk.—The results obtained by feeding infants with infantile atrophy with human-breast milk have been perfectly satisfactory in my experience. The improvement in general condition and the gain in weight often begin within a few days, certainly within two weeks, and continue uninterruptedly, so far as they are dependent on digestion, as long as the breast milk is furnished in sufficient quantities. The gain in weight often exceeds that made by the wet nurse's own baby previously. Whatever function or functions have been impaired, they are evidently capable of the most rapid recovery. My experience warrants me in saying that when such an infant does not gain on the average at least an ounce a day, the fault lies with the wet nurse and not with the infant. The point which I wish to bring out clearly is that these atrophic infants are just as able to gain in weight as any normal infant when they receive a suitable food, and that breast milk is the only food that can be uniformly relied on to accomplish this result. It need hardly be emphasized that if a breast milk is of poor quality and insufficient in quantity it is no more suitable than any other poor food.

Naturally, when choosing a wet nurse, one is selected whose baby is doing well. It is not necessary that the age of your patient and the age of the wet nurse's baby should correspond. While taking breast milk, atrophic infants frequently have several more or less watery and undigested movements daily, without any evident bad results. It does not seem to interfere with the gain in weight nor with their general condition. This is peculiar to breast milk. Such dejections, if associated with other methods of feeding, would be followed by bad symptoms. It can not be denied that there are many objections to the use of a wet nurse. The serious ones, which refer to contracting diseases by the infant, can be avoided. The others must be tolerated to some extent. It must be remembered that in these cases the family of the patient are discouraged and worn out with the care of the infant, and when they see almost immediate and marked improvement they quickly become reconciled to inconveniences and are willing to put sentiment aside. Wet nurses can be controlled up to a certain point, and in this connection it is always a fatal mistake to encourage a belief by the wet nurse that she is indispensable. If she is not satisfactory, another can be procured. It is a fallacy to suppose that one woman's milk is any more suitable for a given infant than another woman's, provided both milks are good, that the quantity is sufficient, and that no mechanical hindrance exists in the one case and not in the other. If the wet nurse is made to understand that the place is hers only so long as the baby does well and she is satisfactory, it will make a difference in her behavior. I have rarely found it necessary to try more than two wet nurses in a given case, but now that I feel so certain that good results will follow this method of feeding in cases of atrophy, I should persevere until a suitable wet nurse was found, no matter how many I tried. The difficulty in making infants accustomed to the bottle take the breast is rarely serious. Persistently withholding other food for some hours will overcome their resistance. I have often found it necessary to allow the wet nurse to retain the charge of her own baby. In such cases the wet nurse's baby was fed on a mixture of cow's milk. It can not be denied that one would rather not be burdened with the wet nurse's baby, but, on the other hand, the care of her baby oftentimes reconciles her to the position and helps to occupy her time. The possibility or probability that she will nurse her own baby can be avoided without much trouble.

In my practice, when cases of atrophy are brought to me for treatment, I make it a point to express my views to the parents on the relative values of different foods. They almost always object at first to the employment of a wet nurse. Out of deference to their feeling and because it is always possible that whoever has had charge of the feeding previously has not made use of mixtures appropriate for such cases, I try mixtures of cow's milk for from two to three weeks and note the results. If the improvement is not satisfactory I recommend a wet nurse. I should omit the preliminary trial if the infant's general condition did not warrant it. Thus far I have never had occasion to regret employing a wet nurse. In many cases even a few weeks of the breast milk will produce such improvement in the weight, general condition and digestive powers of the infant that it will be able to adapt itself to cow's-milk mixtures if for any reason it becomes necessary or desirable to change.

THE ELIMINATION OF THE MOSQUITO.*

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I am quite sure that the members of the American Medical Association are familiar with the general literature regarding mosquitoes, and that a detailed account of the different varieties of these insects, their anatomy, method of development and the physiologic reason why they transmit disease is unnecessary. I have chosen, therefore, to present some practical facts which have a direct bearing on the work of exterminating the mosquito.

A decided and very satisfactory change has taken place in the attitude of the public toward this subject during the past three or four years. At first, efforts to exterminate the mosquito in this country were looked on mainly from a humorous point of view, and but little co-operation was extended by the laity. The public, however, has learned that the object of this work is not only to prevent the annoyance which the bite of this insect inflicts, but also to prevent the transmission of the disease, inasmuch as it has been proved that yellow fever is transmitted by the variety of mosquito known as the stegomyia, and malarial fever by the anopheles, and that so far as we know at the present time this is the only means by which these diseases are propagated.

In the extermination of the mosquito, it is imperative that we should be familiar with certain habits or conditions of this insect, otherwise our efforts are not apt to be attended with success. We must know, first of all, that mosquitoes propagate only in water. The importance of this fact is that it gives definite information regarding the situation of breeding places. We know that the eggs deposited on the surface of the water develop into the larvæ, commonly known as the "wigglers," then into the very transient stage of the pupæ, which in appearance may be regarded as a change in the shape of the larvæ, and that these are very soon transformed into the winged insects, and that from the deposit of the eggs to the development of the winged insect only from twelve to twenty-five days elapse. The latter period, as a rule, is required for the development of the anopheles or malarial mosquito. So far as my own investigations show, the propagation of the mosquito is, as a rule, most active in stagnant or offensive waters, or in that which contains considerable organic matter. Two instances have recently come under my observation where broken sewer pipes discharged into ground depressions, causing collections of offensive water. In the immediate vicinity of these were pools of water which were not contaminated; i. e., collections of rain water and not of offensive fluid. In both instances it was found that the contaminated water soon became exceedingly rich in mosquito larvæ, whereas in the other pools, within two or three hundred feet distant, which contained comparatively clear water, there were very few, if any, larvæ found.

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* This paper was prepared for the Section on Hygiene and Sanitary Science, but was not read, owing to the absence of the author.

Experiments made at the New York Quarantine Station have practically corroborated this. In these experiments large superficial wooden tanks were employed, in which different kinds of water were placed; i. e., rain water, hydrant water, water in which decomposed meat and fish had been placed and water containing other offensive material. These tanks were exposed, side by side, in a place infested with mosquitoes. In all the tests, it was shown that the deposit of mosquito eggs was always greater in the tanks containing the offensive water. Experiments on a smaller scale were also made. Exposed pails and glasses containing the different kinds of water already referred to were employed and the same results were noticed, viz., the deposit of eggs was much greater in offensive water. These experiments were repeated many times with the same result and fully confirmed the conditions, which I have found in mosquito-breeding districts. The experiments to which I have just referred were made with the culex, which is the commonest type of mosquito. There is, however, a variety of the culex known as the *Culex solicitans*, the striped-legged, Atlantic coast or salt marsh mosquito, which may be excepted from the above, inasmuch as it breeds in salt water or in salt or brackish marshes. Furthermore, the malarial mosquito, known as the anopheles, while it may be found breeding in offensive water, prefers small pools of water which are not so contaminated and which may be found in excavations containing surface water frequently having a green scum on the surface. I have found the anopheles larvæ in water contained in small ground depressions along the edge of swamps, also in unused receptacles which are found about houses. Occasionally the anopheles larvæ may be found in the same breeding pool with the culex; this, however, is not common. In a general way, it may be said that mosquitoes will breed in almost any receptacle and in the most unusual and unsuspected places, commonly in rain-water barrels, cisterns, cesspools, tin cans and other metal, glass and wooden receptacles, roof leaders, crotches of trees, etc. It is very necessary that physicians should be familiar with this fact.

It is a common belief that mosquitoes will not breed in salt marshes. My experiments show that in captivferred to the fact that a variety of the culex, known as the *Culex solicitans*, or the Atlantic coast, striped-legged or salt-water mosquito, breeds in salt water or in salt marshes. My experiments show that in captivity the *Culex solicitans* will sometimes deposit their eggs on fresh water contained in glass jars; whether or not they will do this if they are free has not yet been fully decided. It is probable that along the Atlantic coast the salt marshes in many places furnish fully 80 per cent. of the mosquitoes in these sections. Dr. John B. Smith, State Entomologist of New Jersey, who has carefully investigated this variety of mosquito, states that it will deposit its eggs on the soft earth, in salt marshes along the sea coast, and that these eggs will remain intact for months until the swamps overflow and there is sufficient water to develop them into larvæ and subsequently into the winged insects. My experiments have partially confirmed this. I have confined the Atlantic coast or striped-legged mosquitoes in glass jars, in which was placed soft earth taken from salt marshes along the coast, and it was soon found that the eggs were deposited on this material. When salt water was added to this, after the eggs had been laid a number of days, the larvæ very promptly appeared. No proof, however, has ever been produced to show that the larvæ can be developed from these eggs without the presence of water. If the *Culex solicitans* be confined in water to which various amounts of salt have been added or in jars containing sea water, a deposit of eggs on the surface will soon be noticed; however, I have been unable to secure this result with any but the Atlantic coast mosquito.

A general impression exists that the life of the mosquito is very short, probably a few days only. While it is true that the mosquito is not a resistant insect and easily succumbs to all sorts of influences, it is a fact that it lives indefinitely. In the hibernating stage it is known that it may live from the fall to the following spring, and during the warm weather, or in its active stage, it may live a number of weeks. It is practically impossible to arrive at any definite conclusion regarding the life cycle of the mosquito, inasmuch as experiments do not furnish satisfactory evidence, for the reason that they can not be carried out under the same conditions that naturally exist. In other words, mosquitoes may die from captivity alone, or when they are unable to select the character of food which they require. It is safe to assume, however, that if they will live a certain period in captivity, they will live equally long when they are free to go and come as they please. There have been many investigations made and published on this point, and experiments have shown that in captivity mosquitoes will live for a number of weeks. I have kept them in wire cages containing nothing but sugar water for almost two months; furthermore, mosquitoes may be kept for a long period in captivity without food or water, provided sufficient air be present. Aside from the interest in securing definite knowledge in this direction, the length of time which mosquitoes may live in captivity has an important practical bearing, as it has been claimed that yellow fever may be transmitted from one place to another through the agency of the stegomyia, or yellow fever mosquito, confined in baggage, etc. In order to secure so far as possible definite information regarding this part of the subject, I carried out the following experiments: A number of boxes which could be compared to trunks, also canvas bags, such as sailors use to contain their clothing, and other receptacles were filled with clothing, blankets, bedding, etc. Mosquitoes were collected from a horse stationed in a thickly infested mosquito district. This was done by placing glass test tubes over the mosquitoes. When a sufficient number were secured the openings of the tubes were filled with light cotton plugs. The tubes were then introduced into the receptacles already described, the cotton plugs removed and the tubes gradually withdrawn and shaken sufficiently to drive out the mosquitoes. This method was employed in order to prevent any possible injury to the insect. In each experiment a record was kept of the number of mosquitoes in the different receptacles, and, although many experiments were made, it was found that in no instance did the mosquitoes in any receptacle live longer than thirty hours. I believe, therefore, that the treatment of baggage coming from yellow fever ports is unnecessary, provided the period of transit exceeds two days.

Considerable discussion has taken place among those who have investigated the mosquito regarding the origin of the first crop of these insects, which appear in the spring or summer of each year. As I have already stated, Dr. John B. Smith claims that the egg of the *Culex solicitans,* or striped-legged or Atlantic coast mosquito may be deposited on the moist earth, in brackish or salt-water swamps, and that in this situation, he believes, they will remain dormant or hibernate until the following spring, when an overflow of water takes place and the eggs become active and are developed into larvæ and subsequently into the winged insects. It has also been shown that larvæ will hibernate and that during the winter they may be found in ice and after being thawed out become active. The latter phenomenon has come under my notice, but I have seen no instance in which larvæ after being frozen and thawed out have developed into winged insects. This may occur, but I am sure that it is uncommon. Although the eggs of the *Culex solicitans,* Atlantic coast or striped-legged mosquitoes, may hibernate during the winter, and be the origin of the first crop of this variety of the mosquito in the spring or summer, I am satisfied from my own experiments that the first crop of mosquitoes which come to us each year, particularly in inland towns, or about fresh water supplies, is due to the hibernation of the winged insect. It is common experience with all who live in mosquito-infested districts frequently to find these insects in midwinter, particularly in overheated rooms, etc. It is evident that when the cold weather approaches the mosquito instinctively seeks some protected place, such as crevices in the interior of tree stumps, cellars, barns, interior of houses, etc., and, while there are probably but comparatively few which do not succumb to the cold weather, sufficient survive to perpetuate the species during the following year.

Another very much disputed point regarding the mosquito is whether or not they go far from their breeding places. While there is indisputable evidence that mosquitoes at times are found far from home, there is also the best evidence that they do not go willingly. One of the most satisfactory instances that I know of, which proves that they are found some distance from their breeding place is that furnished by the New York harbor pilots, whose boats are frequently anchored along the Jersey coast, three or four miles from land—occasionally they become suddenly infested with mosquitoes. The pilots are unanimous in their statement that when this occurs there is always a breeze from the shore. While indisputable evidence has been presented to show that mosquitoes go far from home on land, as well as at sea, there is good reason to believe that this does not commonly occur. It is the opinion of all who have carefully studied this insect that they do not willingly go far away, and I believe that we are justified in assuming that if a section of country be infested with mosquitoes a breeding place exists in the immediate vicinity. I speak emphatically in this matter, as many times after it has been positively stated that mosquitoes must have come a long distance, it has been found that breeding places existed in the neighborhood, and there is no doubt that the difference of opinion which existed on this subject is largely due to the fact that local breeding places are frequently overlooked. When it is remembered that the female mosquito will lay three or four hundred eggs at one time, and that it only requires from twelve to twenty-five days for these eggs to develop into the full-grown winged insect, it will be better understood how a small receptacle will breed a large number of mosquitoes. Therefore, before hunting for the breeding places of mosquitoes at some distance from home, we should first examine every detail of our own premises to ascertain if receptacles for the propagation of this insect can not be found.

These breeding places are often discovered in the most unsuspected locations. In connection with this and as an item of interest, I will refer to an investigation made two or three years ago. My attention was called to a number of cases of malarial fever occurring in two or three houses adjoining each other. Anopheles were found in the bedrooms of these patients during the evening. In close proximity to these houses were found numerous pools of water, and, although each one was examined with great care, no anopheles larvæ were found. The most careful inspection was made of every cistern, rain-water barrel, etc., in the neighborhood with the same result. This lent some color to the belief that the mosquito in this instance might have come from a distance. Further investigation was made, however, and in the garden of a house in the rear of those containing the cases of malarial fever, and which had been vacated for some time, was found an old cake pan almost entirely covered by long grass, and in this was found a large number of anopheles larvæ. An ordinary inspection would not have discovered this receptacle.

As a résumé of what we know at the present time, it may be said:

First, mosquitoes do not propagate without water, and, as a rule, so far as the culex is concerned, the more offensive the water, the greater the propagation. Although the anopheles or malarial mosquito will propagate in offensive water, sewerage, etc., they are more apt to be found in small collections of water, about fresh water swamps or in small receptacles about the house. In large ponds or pools of fresh water, particularly those which contain small fish, which prey on the larvæ, mosquitoes of any variety are not usually propagated, but the little pockets of water along the edges of these ponds or in other places frequently act as breeding places. We also know that a variety of mosquito known as the *Culex solicitans,* or the striped-legged, Atlantic coast or salt marsh mosquito, breeds in salt water or in salt marshes. Mosquitoes breed in cisterns, rain-water barrels and cesspools in enormous number; other receptacles about the premises, no matter how small or where they are situated, may also act as breeding places. It is about our own homes, therefore, that the examination should first be made to ascertain where the propagation of this insect is carried on.

Second, the life of the mosquito is not confined to a few days, but under various circumstances may extend over a period of weeks or months.

Third, the first crop of mosquitoes which appears in the early summer of each year, particularly in inland towns, is principally due to the deposit of eggs which have hibernated during the winter months. These, of course, are comparatively few in number, but are sufficient for the purpose above referred to. The variety of the mosquito known as the *Culex solicitans* is probably largely perpetuated by the hibernation of eggs, which are deposited in the soft earth, in salt marshes along the sea coast, and remain dormant during the winter; when the warm weather returns and the marshes are overflowed with water, these eggs become active and develop into larvæ; subsequently into winged insects.

Fourth, although there is conclusive evidence that mosquitoes are sometimes carried long distances from home, they do not willingly go far from their breeding places, and it may be assumed that if a section is infected with mosquitoes breeding places exist in the immediate vicinity. It is probable that an exception may be made in the case of the *Culex solicitans*, or salt-water mosquito, which appear to go further from home than other varieties of the culex or the anopheles. There is good reason to believe, however, that they do not breed away from the salt marshes or in collections of fresh water.

Efforts to prevent the propagation of the mosquito consist in abolishing or removing receptacles which contain water. This applies to both large and small ground depressions, swamps, etc., and to portable and stationary receptacles about buildings. The scientific, practical and radical method of removing water in ground depressions is by drainage or filling in, and the use of petroleum oil in these instances can not be regarded as a substitute for this purpose and should only be used as a temporary measure. In mosquito-infested districts our first action should be to remove, so far as possible, from dwelling houses and other buildings, all sorts of metal, glass and wooden receptacles for water. Cisterns and rain-water barrels should be supplied with tight-fitting covers; by having the center of these covers constructed of wire netting sufficient air is admitted. Roof leaders should be kept properly graded; otherwise parts of them may act as breeding places for the mosquito. If ground depressions either about the premises or in the neighborhood can not be drained or filled in, petroleum oil may be used as a temporary measure. The crude petroleum is probably superior to the refined oil and should be used in the proportion of one pint of oil to a water surface of about twenty feet in diameter —even a less amount of oil may be effective. This procedure should be repeated every two weeks. The method by which the oil destroys the larvæ or wigglers is probably not by a toxic effect, but by a mechanical one. The larvæ must come to the surface of the water for air at least every two minutes. If watched carefully it will be seen that the culex, or common variety, approach the surface of the water at right angles, with the tail uppermost, the air being taken in at this end, which is extended sufficiently above the surface. The anopheles larvæ may be distinguished from the culex at this stage, inasmuch as they do not lie at right angles to the surface of the water, but parallel to it, and receive the air by projecting the head above the water instead of the tail. It is probable that the oil thrown over the surface plugs up the delicate respiratory apparatus of the larvæ and practically suffocates them. This is largely corroborated by experiments. If a small amount of petroleum oil is thrown over the surface of the water in a glass jar containing larvæ, the latter will succumb in from ten to twenty minutes; toxic agents do not kill them with such rapidity, as careful investigation has proved. The odor of petroleum oil is either very unpleasant or injurious to the winged insect. It has frequently been noticed when petroleum has been used in swamps in large quantities that the number of mosquitoes abruptly diminishes.

In treating large bodies of water with petroleum, the ordinary garden sprinkling pot is a good and practical method of distributing it. Experiments made with permanganate of potassium, bichlorid of mercury, sulphate of copper, carbolic acid, etc., have shown that these agents are greatly inferior to petroleum for this purpose. Their action is slow, and the mosquito larvæ live in comparatively strong solutions. For instance, larvæ have remained active from one to three days in a 1/1500 solution of bichlorid of mercury. Even comparatively strong solutions of carbolic acid or permanganate of potassium do not destroy them for some time. In some very exhaustive experiments made with sulphate of copper and lime for the destruction of mosquito larvæ,[1] I found that these agents did not destroy the mosquito by a toxic effect, but slowly by clarifying the water and precipitating the organic matter which it contained, thereby removing the nourishment from the larvæ. Furthermore, it must be remembered that pools of water throughout the country may be used for drinking purposes, particularly by animals, and that the use of such agents as bichlorid of mercury, carbolic acid, etc., are, therefore, unsafe. On the other hand, the petroleum oil is cheap, practically harmless and destroys the larvæ at once, and so far as we know at the present time is superior to anything else for this purpose, provided proper drainage or filling in can not be effected.

All varieties of mosquitoes are most active after sundown. This we know not only from the annoyance which they cause us, but from the indisputable testimony presented by medical experiments with the malarial and yellow fever variety. During the day, when the mosquitoes are generally inactive, they select for their abiding place the high grass and underbrush. Therefore, this material should be removed if present about the premises in mosquito-infected districts.

The points to which I have referred in this paper constitute the bulk of what is at present really known regarding the habits of the mosquito and the means of exterminating them. Many investigations, however, are now in progress in this country, and there is good reason to believe that much valuable information will be added to our knowledge during the next year.

ANKYLOSTOMIASIS OR UNCINARIASIS.[*]

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GRENADA, BRITISH WEST INDIES.

This disease, an endemic anemia caused by the parasite. *Ankylostoma duodenale* or *Uncinaria duodenalis* and *Uncinaria americana* (Stiles), is a dangerous one both to the individual and to the community in general, leading as it does in individual cases to degeneration of important organs, resulting probably in death and to widespread infection and deterioration among the community in general.

The parasite is now too well known to need a full description; in Grenada, B. W. I., the large majority of cases show the old world parasite, viz., *A. duodenale* but in many many cases I have come across the variety described and named by Stiles, *Ankylostoma* or *Uncinaria americana,* the new world variety. The chief differences between these two species lie in the size and the armature of the mouth; the *Ankylostoma duodenale* being larger with a heavily armed mouth, viz., two pairs of hook-like ventral teeth and one pair of dorsal, the *Uncinaria americana* being smaller with 2 pairs of ventral plates or lips and one dorsal pair (Stiles). Microscopically the worms appear as short threads white or gray in color, according to the contents of the genital organs, usually I have found that the white are males and the gray colored ones females with ova; I have only occasionally seen them blood red.

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[1] Medical Record, Jan. 21, 1905.

[*] Read in the Section on Stomatology of the American Medical Association, at the Fifty-sixth Annual Session, July, 1905.

DEVELOPMENT.

The ovum develop in earth under favorable conditions of humidity and temperature and shade. I have found that a certain proportion of water is necessary, in undiluted feces the larvæ appear but soon die; in feces diluted with much water, in a few cases of mine the larvæ appeared; but did not live, but in the majority the ova did not develop. The ova developed at the ordinary temperature in this island, viz., 80 to 90 F., but the larvæ are killed and the ova prevented from developing when placed in ice. Direct exposure to the sun light killed the larvæ when these had developed and also prevented the ova from developing so that a certain amount of shade is required for the development of the larvæ from the ova. Each ovum only produces a single larva and this never takes place within the host but outside so that an increase of adult worms in any particular case is impossible without reinfection from without; this point is therefore of great importance both in the treatment and in the prevention of this disease.

MODES OF INFECTION.

Two methods of infection are possible: 1. By the ingestion of the larvæ in the food or water; 2, by penetration through the skin and subsequent migration to the intestine where the embryos mature into the adult worms.

In Grenada the class found to be chiefly affected with the disease are the laborers and agriculturists, consisting chiefly of negroes, East Indians and poor whites. The huts occupied by them are small, usually raised a few feet off the ground in most cases, entirely surrounded with vegetation almost up to the walls, in this island being chiefly bananas and cocoa and other trees planted to protect the growing cocoa. Sanitation is unknown among them and latrines never used, the feces being deposited on the earth among the trees so that in time the soil, around these huts and also in the fields where they work, becomes heavily infected. During the rains, the mobile larvæ also ova are washed down into the pools, shallow wells and streams and as most of the villages depend on such for their drinking water, it can be readily understood that infection in this manner, viz., by ingestion, can take place; helped to a very great extent by the dirty habits of the people such as eating with soil-stained hands, improperly washed vegetables and fruit and as above stated drinking water infected with the larvæ and containing a large quantity of earthy matter in suspension. I am of opinion that in this island at any rate this method of infection takes place as the drinking water contains to my knowledge both the living larvæ and earthy matter in suspension, so that although many observers have remarked and I have proved to myself that the embryos die on drying and that the earth taken in must be moist yet in the above condition we have both earth and moisture. True geophagy is not practised to any extent in this island, chiefly among children, so that a few cases may be set down as due to this method of infection.

The second method of infection, viz., penetration of the skin by the larvæ, is without any doubt the true one as proved by the experiments of Looss and others. In every case treated by me I have always elicited the fact that the patient has suffered from a form of dermatitis known in this island as "chauffie" or "grounditch" prior to his anemia, the period ranging from 3 months to a year or two, and in advanced cases, they have had attacks every year especially during the rains. I have had 10 cases of this dermatitis under treatment in the hospital and the following were the chief characteristics; in cases of recent infection, scattered vesicles were seen, many of which broke down, leaving small ulcers, usually affecting the lateral side of the feet and the urb of the toes; in older cases the ulceration was more extensive, deep cup shaped ulcers being seen on the dorsum and lateral parts of the foot and between the toes. Some of these cases resisted treatment for some time, although in the early cases they healed quickly. These cases remained under treatment and in about 3 to 6 months from the date of the first appearance of this dermatitis they complained of uneasiness in the epigastrium, in some cases actual pain and other dyspeptic symptoms and on my examining the feces later I found the characteristic ova, thus showing that this dermatitis known here as "chauffie" is caused by the penetration of the skin by these larvæ. This skin infection is wide spread in the island, especially on the estates and among the villages, and nearly every adult laborer has had it and also the children who are allowed to roll about and play in the earth around the huts.

The disease chiefly affects the country and very few cases are seen in the larger towns and this fact is easily explained as follows: No sanitation in the villages, feces deposited on the earth among the bananas and cocoa trees; the ideal temperature, shade, humidity and decaying matter being afforded by these groves for the development of the ova and the poverty and filthy habits of the class as a whole, necessitating walking barefooted, infecting himself and then carrying it to his hut and infecting the children in turn. With regard to immunity from this disease, there is none; all classes may become infected but the poorer classes are more liable not only from the nature of their work, poverty, but also to the inadequate diet both in quality and quantity.

SYMPTOMATOLOGY.

Within the past year, April, 1904, to April, 1905, I have had 215 cases under my treatment and observation at the Colony Hospital, these cases were simply admitted as they applied and a large number also suffered from other complications. I found that uncinariasis could be divided into two distinct classes, (a) acute, and (b) chronic, the acute class being further subdivided into (1) mild cases and (2) moderate. On a microscopic examination of the feces the ova can be readily detected but the number present in the field is no guide to the extent of the infection, in many cases, although if large numbers are seen it is probable there are a large number of parasites but the reverse is no necessarily correct. The mere presence of this par does not constitute the disease and these early cases are only of importance from their being a source of danger to others and to the district or village in which they reside.

Mild Cases.—Pain or uneasiness in the epigastrium often relieved by but usually increased by the ingestion of food. Appetite lost but in many cases ravenous. Frontal headache, dizziness and palpitation, breathlessness on exertion, and indisposition to do any work, either physical or mental. In these cases anemia was not marked and pallor was only slight, being yellowish in whites and muddy in the colored races.

Moderate Cases.—In these cases all the above symptoms were pronounced, pallor is more marked and the anemia prominent. The mucous membranes and conjunctivæ pale, skin dry, appetite in the majority of cases lost, nausea and vomiting present in many cases, pain in the epigastrium. Headache is very severe and continued, referred chiefly to the frontal region, often temporal, vertigo and extreme tinnitus present. Palpitation is severe and breathlessness ensued on the slightest exertion. Great languor and lassitude is complained of, and fever of an irregular, intermittent type is present with pains in the joints.

Chronic or Very Advanced Cases.—Here the anemia is intense and pallor very extreme, the patient having an icteric tinge of the sclera. Edema of the feet and ankles is present with general anasarca in the majority of cases and in 8 cases under treatment ascites was present. The digestive symptoms have changed, either becoming more pronounced, with vomiting on ingestion of food, or in many cases they disappear altogether. Precordial pain and pain in the chest is complained of, palpitation is severe and dyspnea comes on with the slightest exertion, the pulse is weak and compressible and pulsation of the large veins of the neck is noticed. Vertigo and tinnitus is extreme, this latter symptom often causing sleeplessness. Dimness of sight is complained of and in many cases the pupils are noticed to be dilated. The urine is normal in quantity, usually pale in color and in only 3 cases was albumin present. On auscultation bruits are heard over the veins and there is a well marked murmur on the valve areas and the heart itself is often dilated with the apex beat depressed. The muscular system is weak although the muscles appear plump and well nourished and the patient is absolutely incapacitated from any kind of work. The patient is listless and apathetic and the temperature is often raised but in the majority of cases it is subnormal.

Digestive System: Stomatitis.—In two cases only have I seen a stomatitis affecting the tongue and mucous membrane of the mouth and both these cases were in the advanced stages. I do not attach any importance to it as I have not seen it present in other cases. Pyorrhea alveolaris is very common in this island among the laboring class, also caries of the teeth and may be noticed in all the cases of the disease, but I do not see any connection between them.

Tongue.—In the acute and chronic cases, the tongue is very pale, almost white in color, usually coated but often red and raw looking and denuded of epithelium. I have remarked a peculiar pigmentation seen in every case except the poor whites. It consists of a black or blue black pigmentation, in minute spots either singly or in patches usually on the tip and sides of the tongue; it is not seen, as I mention above, in cases in whites but only in the pigmented races, negroes and East Indians; I am of opinion that there is some connection between this pigmentation and the disease but so far I have not been able to establish it. The digestive symptoms are very similar to those due to dyspepsia, and often in the mild cases are simply treated as such, the feces not being examined with the result that the case steadily progresses instead of improving. Appetite is variable, being lost in many cases but ravenous in others; pain or uneasiness in the epigastrium is a well marked symptom and is likened by the patient to the sensation of having a stone in the stomach; this symptom is usually increased by the food taken by the laboring class here which is of poor quality and very coarse and bulky, quantity instead of quality being preferred. Flatulence and palpitation is very common and the bowels are usually constipated, only in the very advanced cases have I seen diarrhea.

Circulatory System.—On inspection, the apex beat is found to be pronounced, especially if the patient is made to walk a little and is usually displaced downward and to the left, but in many of the chronic cases it is feeble. On percussion, the cardiac area is found to be enlarged in the second class of cases and in the chronic cases dilatation is present. On auscultation bruits are heard, very marked in the third left space and in 8 cases under my treatment they were practically organic, fatty degeneration and dilatation having occurred. (Two of these cases died in hospital and enabled me to make an autopsy.) Precordial pain and pain in the chest, palpitation and dyspnea are present and are very distressing symptoms in chronic cases. Vertigo and tinnitius aurium are also other well marked symptoms especially in the later stages and are no doubt adjuncts in causing the inability of the patient to get about and in producing the sleeplessness complained of in many cases.

Nervous System.—Symptoms pointing to this system are languor and lassitude, mental apathy, insomnia and the severe and continued headache, usually frontal often temporal and sometimes the pain is referred to the whole head. Numbness of the feet and formication are complained of as well.

Integumentary System.—The skin is harsh and dry, and in the chronic cases general pruritus is often a constant and very annoying symptom, atrophy present in chronic cases.

Feces.—In all the above cases I have not seen any blood in the stools, but in 6 cases I have noticed blood stained mucus; but it is not a constant symptom. I have mentioned that constipation is usually complained of but diarrhea may occur. Miscroscopically the ova are readily seen, in conjunction with those of *Ascaris lumbricoides, Tricocephalus dispar* but I have also found them in conjunction with those of *Oxyuris vermicularis* and in 20 cases *Rhabdonema intestinalis* was present.

Blood Examination.—On a microscopic examination, the point that is noticed is an increase of the eosinophiles, but on making a count there is no marked leucocytosis, the percentage of hemoglobin varied but there was a slow but steady decrease as the disease advances, but it was also noticeable that after treatment and when the patient began to improve the red corpuscles increased but the per cent. of hemoglobin often fell before it began to rise.

The following table shows the percentage obtained by me from blood counts in 20 cases: Eosinophiles, 18; polymorphonuclear, 55; large lymphocytes, 8; small lymphocytes, 17; other cells, 2; total, 100. Hemoglobin varied from 8 to 40 per cent.

Diagnosis.—The diagnosis of the disease depends not so much on the symptoms, which, although they may be well known, are very often mistaken for those of dyspeptic troubles in the mild cases and of heart disease in the advanced cases, but on the discovery of the ova in the feces. The ova are very characteristic and can not be mistaken for those of any other parasite as they are unstained by bile, while those of the other parasites are usually stained yellow. The ova of the *Oxyuris vermicularis* may be mistaken by beginners for that of *Ankylostoma*, but a little practice enables them to be easily distinguished. The *Ankylostomum* ova are perfectly clear and chitinous, shelled with a granular grayish vitellum, usually segmented into four, sometimes six or eight parts; those of *Oxyuris* are smaller and the vitellum is not segmented but fills up the entire shell. In many cases the temperature is of an irregular intermittent or remittent type, patients complaining that the fever comes on every night or morning, and this fever often causes the disease to be mistaken for malaria. A microscopic examination of the blood soon clears this point, although malaria is very often, especially in certain districts of this island, a complication of the disease, and when the case is treated as one of malaria without an examination of the feces having been made, the practitioner is surprised to find that quinin has, seemingly, no effect on the temperature. (I had a case of this nature sent into hospital—vide report on case attached.)

MORBID ANATOMY.

The following data are taken from four autopsies made by me at the hospital on bodies of patients who died from advanced uncinariasis. One died suddenly (forty-eight hours) on the second day after admission (this case I have described separately, with a complete history).

General Condition.—The bodies appeared plump and well nourished, the skin was harsh and dry, of a dirty, muddy color, edema of the feet and ankles with ascites was present, and there was serous effusion into the various cavities, viz., pericardium, pleuræ and ventricles of the brain; subcutaneous fat was abundant and yellow in color.

Heart.—The heart was found to be enlarged, fatty degeneration and dilatation being present with incompetence of the valves; the heart walls were thin and flabby, and patches of atheroma were present in the aorta. The cavities were found filled with soft dark clots.

Lungs.—The lungs appeared normal, although pale in color, but in one case advanced pulmonary tuberculosis was present and was no doubt the cause of death. Pleural cavities contained about a pint of clear yellowish fluid.

Spleen.—This organ appeared normal in 2 cases, but in the others was enlarged and fibrous, probably due to malaria, as both cases came from a very malarious district.

Liver.—This was pale slightly enlarged in all the cases; fatty degeneration was present and the tissue very friable.

Kidneys.—In one case the kidneys were small, pale, capsule adherent (chronic interstitial nephritis), but in the others they appeared normal, although pale in hue.

Stomach.—This organ showed signs of chronic catarrh, in 2 cases dilatation was present, but I did not find any uncinaria in the cavity of the organ.

Intestines.—The parasite was found in large numbers, were chiefly in the upper part of the jejunum, but also in the duodenum. The parasites were lying free in the lumen of the bowel, but a great many were attached to the intestinal wall. There was a large quantity of mucus present in the intestine, in which the worms were lying embedded. The mucous membrane should show minute hemorrhagic spots, as well as pigmented spots. In one case the wall itself was very thin. There was no blood in the intestines.

Brain.—The brain showed anemia with effusion into the ventricles of a pale yellowish fluid.

The above four cases were the only ones that died and enabled me to make an autopsy. The majority of the cases made rapid and uneventful recoveries, but a few of the very advanced cases were slow and remained in hospital over three months before being discharged.

PIGMENTATION OF TONGUE AND ITS PROBABLE CAUSATION.

In every case of ankylostomiasis under my treatment, with the exception of the poor whites who are of European parentage, the pigmentation of the tongue is seen. It consists of minute black, blue-black or brown spots, usually on the lip and sides of the tongue; sometimes the pigmentation is seen in larger areas. The colored races in this island, viz., the negro, East Indian and their descendants, show this pigmentation in every case of uncinariasis and it is especially marked in the chronic cases.

Pigmentation of the skin and mucous membranes may be derived either from the blood or bile or from external agents. In these spots the pigment is deposited chiefly in the mucosa of the papillæ in its lower layers, but also in the upper layers. There is no doubt that disturbed innervation plays a part in producing this result, as is seen in the bronzing of the skin in Addison's disease, which is probably due to inflammation of the abdominal sympathetic. The pigment melanin closely resembles hematin, one of the constituents of the hemoglobin, in its composition, hence we can conclude that it is derived from that source. Its presence is usually associated with two very opposite conditions of nutrition, being sometimes an accompaniment of tissue degeneration and at others of active trophic changes. It is well known that the chlorophyl of plants and the hemoglobin of the blood are intimately associated with respiratory changes. In the majority of cases where pigment is found some concomitant blood change is also present, as, for instance, in malaria, pigment is formed from the destruction of the red corpuscles and deposited in various organs of the body, and without doubt deposition of pigment is very probably under the control of the sympathetic system.

In uncinariasis we have a toxin produced by the parasite and which is the true cause of the profound anemia, blood and nervous changes. Here, therefore, we have both the necessary factors for the production of pigmentation, not only on the tongue and mucous membranes, but elsewhere, viz., (1) blood changes in which the hemoglobin of the red corpuscles is broken and disintegrated, as shown in the reduction of the hemoglobin percentage as the case advances, and (2) disturbance of the nervous system by the same toxin which affects all centers sympathetic included, as evidenced by the symptoms.

Dr. Laycock has observed that pigmentation may be regarded as having reference to the excretion of carbon after it has served its purpose in the tissues, and hence, pathologically, pigmentation may be taken to be expression of (1) imperfect oxidation of the carbon so that it is not eliminated as carbonic acid from the body, (2) excessive production of carbon from highly carbonaceous food, (3) pigment resulting from the disintegration of the hemoglobin of the red cells. In uncinariasis all three of these factors are present, produced by the toxin excreted by the parasites, (1) diminished oxygenating power of the blood from destruction of the blood cells so that carbon waste is not got rid of, (2) presence of hematin from disintegration of the hemoglobin, and in this island (3) we have the third factor, viz., excess of carbonaceous food, as the laborers all live on coarse, bulky food, the quantity rather than the quality being the chief item of importance. The class of people in whom the disease is chiefly seen are the colored races, and, therefore, more liable to pigmentation than those races in whom pigment is not usually present in the skin. From the above facts I am of opinion that this pigmentation of the tongue and buccal mucous membranes and mucous membrane of the intestine has some connection with the disease and may be taken as of diagnostic value, as I have never failed to find the ova and the other symptoms of the disease present in any case which showed this pigmentation.

Another view of its causation may be taken in the dermatitis or "chauffie" affecting the laboring class in this island and which without doubt is the true method of infection, pigmentation of the skin affected takes place so that in this island, where the class affected are dirty in their habits and careless as to what they eat or drink, unwashed fruit and vegetables, muddy drinking water is one method of infection, as during the rains the water supply, which usually consists of shallow wells and ponds, is contaminated to a large extent, and as the larvæ do not take very long to penetrate the skin, as seen from Claude Smith's experiments, it may be possible that, when taken into the mouth, they make their way more easily and quickly into the mucous membrane, and that these pigmented areas are the points of their entrance.

Case 1.—A. J., aged 19, unmarried, living with his parents, laborer in cocoa estate. Admitted to Colony Hospital, Feb. 2, 1905.

History.—Patient has been ill for the past year with general weakness as he termed it, unable to do much work owing to breathlessness and palpitation. Three weeks prior to admission he had a severe rigor, followed by fever and slight perspiration; fever comes on every day. Has lost flesh and is emaciated. Complexion muddy, lips and buccal mucous membranes very pale, tongue shows minute pigmented spots on lip and sides. Conjunctivæ very pale and scleræ have an icteric tinge, appetite very poor, can only take fluid nourishment, pain and tenderness in epigastrium, nausea and vomiting after food, bowels constipated and have usually been so for the past year. Skin harsh and dry and does not perspire very much, itching sensation over the whole body. Precordial pain and pain in the chest complained of, palpitation marked, with dyspnea in exertion. Dimness of sight, with severe d continued frontal headache and tinnitus aurium. Vertigo and sleeplessness present. Very weak and has not left his bed for the past three weeks. Pulsation of veins in the neck, apex beat depressed and to the left; marked bruit in third left intercostal space. Pulse soft and compressible.

Examination of Feces.—Ova of uncinaria present in large numbers with those of *Ascaris lumbricoides* and *Tricocephalus dispar.* No blood in the stools.

Examination of Blood.—Malaria Estivo-autumnal parasite present. Eosinophiles, 20; polymorphonuclear, 58; large lymphocytes, 10; small lymphocytes, 12.

Temperature on admission, 102.6, rising on the day after to 104 degrees. No marked rigor or diaphoresis.

Diagnosis.—Ankylostomiasis or uncinariasis. Complication, malignant malarial fever.

Treatment.—Saline aperient every morning. Hypodermic injection of quinin. bihydrochlor. grs. 5 every morning at 10 and in the evening. Diet: Milk, beef tea, arrowroot, etc.

Course.—Temperature still continued. February 17 blood re-examined and found free of malarial parasites. Temperature, 99.8. Feces contained the ova in numbers. February 20, 120 grs. thymol given in cachets of 40 grs., followed by a saline aperient, four hours after the last dose, stools carefully washed and found to contain large numbers of worms. Temperature reduced, but still above normal. Thymol repeated February 23 and stools examined worms still being passed.

Repeated thymol February 26 and 28, and after the last dose only a few worms (6) were found in the last stool.

Feces examined March 2, no ova present, but thymol repeated once more and a week later they were again examined, but no ova present, similarly on the 17th.

The diet was now changed, as appetite had increased, after the second dose of thymol the headache disappeared and the tinnitus was very much decreased, and patient slept well at night. He was now put on the following mixture as well:

℞.	Tinct. ferri perchlor	ʒiiss	10
	Liq. arsenitis hydrochlor	ʒi	4
	Mag. sulph	ʒiv	15
	Syrupi aurantii	ʒiss	6
	Aquæ q. s. ad	℥viii	240

M. Sig.: One tablespoonful three times a day after meals.

Blood examination, March 2: Eosinophiles, 15; polymorphonuclear, 65; large lymphocytes, 10; small lymphocytes, 7. Hemoglobin percentage, 22.

Blood examination, March 31: Eosinophiles, 13; polymorphonuclear, 45.5; large lymphocytes, 14.8; small lymphocytes, 26.2.

Patient is doing well, has gained weight and flesh, all symptoms have disappeared, skin moist. Rapid and uneventful convalescence.

Case 2.—R. G., aged 36, married, children, laborer.

History.—Patient has been ill for past six years, gradually getting worse each year; weakness, fever, breathlessness and palpitation, disinclination or inability to work. Husband and children also affected similarly. Has had "chauffie" very often, particularly after or during the rains. Appearance plump and well nourished. Very anemic; has been very ill for the past month; bedridden; brought to hospital in a chair.

Examination.—General anasarca very marked, ascites developed, face and scalp puffy and edematous. Says she never perspires, appetite lost, pain and tenderness in epigastrium, vomiting after food. Tongue very pale and white, teeth indentatious on tongue, numerous minute pigmented spots on lips and sides, with bluish streaks on side as well.

Superficial veins of abdomen distended, diarrhea, feces yellowish brown, no blood; on examination ova of ankylostoma and ascarides were seen. Liver enlarged, abdomen tender on pressure, ascites present. Precordial pain and pain in the chest very severe, dyspnea extreme, cough troublesome, bases of lungs dull on percussion.

Extreme vertigo, marked tinnitus aurium with severe continued frontal headache, sleeplessness and has had fainting attacks.

Vision dim, great weakness. Heart markedly dilated, with bruits, pulsation of veins in neck; apex beat full and diffused. Pulse 110, weak and dicrotic. Urine normal, patient quite sensible, but prefers being left alone. Temperature on admission 97.8.

Diagnosis.—Ankylostomiasis, chronic.

Treatment.—Milk and beef tea, stimulants.

Patient did not do at all well, and died suddenly on the second day after admission.

Blood Examination.—Eosinophiles, 8; polymorphonuclears, 56; large lymphocytes, 6; small lymphocytes, 30. Hemoglobin, 10 per cent.

Morbid Anatomy.—Lungs: Very pale, but otherwise normal; bases edematous and pleural cavities contained about 2 pints of straw-colored fluid.

Heart: Pericardium contained 4 ounces of serous fluid. Heart very much enlarged and dilated; cavities filled with soft dark clots. Fatty degeneration present in the walls; valves inefficient.

Liver: Enlarged, pale and fatty degeneration present. Abdomen contained large quantity of ascitic fluid.

Spleen: Slightly enlarged, pale but otherwise normal.

Intestines: Jejunum and duodenum both contained large quantities of the worms, most of which had dropped and were lying in the lumen of the bowel. Mucus present in large quantities. Large intestine contained dark yellowish brown fluid feces. Intestinal wall thin and atrophied in parts, presenting large numbers of minute hemorrhagic and pigmented spots.

Stomach: Signs of chronic catarrh present; no worms in the cavity itself.

Kidneys: Pale and otherwise normal.

Brain: Anemic and ventricles filled with fluid. Pia mater stripped easily off the cortex, serous fluid beneath it filling the sulci.

Death in this case was due to mitral inefficiency, resulting from dilatation of the heart caused by chronic uncinariasis or ankylostomiasis.

TREATMENT.

Thymol is the drug employed by me and I have had the very best results with no single ill effect even in children. The dose usually given by me varies with the age of the patient and also his general condition; it ranges from 10 grains to a child to 40 grains for an adult at a single dose.

The following is the procedure adopted by me at the Colony Hospital: The patient is carefully prepared for three or four days after admission, the bowels are kept active by saline aperients administered every morning in sufficient dose to cause one evacuation, the diet is light and easily digested, viz., milk, beef tea, arrowroot, etc., with pepsin if required. In very advanced cases with cardiac troubles, stimulants and cardiac tonics administered. The chief object in the administration of the aperient being to get rid of the mucus with which the intestine is often loaded and in which the parasites lie buried.

At 10 p. m. on the night prior to the administration of the thymol a dose of saline aperient is given and no food except a pint of milk given to the patient next morning and two hours afterwards the first dose of thymol is given. I give it in the form of cachets each containing five grains for a child and 40 grains for an adult and one cachet is taken every hour till 15 grains are given to the child and 120 grains to the adult. In old people and very advanced cases in adults I usually give 30 grains instead of 40 grains. No food is allowed the patient and four hours after the last cachet is given a saline aperient is given and the patient allowed his diet. The stools are collected and carefully washed and invariably show a large quantity of worms, in the case (1) described by me 500 worms were passed after the first administration of thymol. The above treatment is carried out on three alternate days, occasionally an interval of four or five days is allowed in debilitated cases; the feces are carefully examined for ova a week afterwards and usually found free of ova. The feces are again examined two days before the patient is discharged and it is my invariable practice to give another single dose of thymol and to carefully examine the stools again. The after-treatment of the case consists in the administration of tonics, chiefly iron and arsenic, often combined with strychnin; the diet is increased, but is still one which is easily digested and nourishing and usually the patients seek their discharge in from a fortnight to three weeks after the feces are free of ova; and are recommended to continue the tonic at their own homes for a still longer period. I usually administer the iron and arsenic in the form mentioned in the report of Case 1, above, as I find it gives the best results in a shorter period of time.

The saline aperient used by me and which is preferable to any other aperient is the following:

℞. Sodii sulphas.
Mag. sulphas., āā.....................ʒiss | 6
Aqua ad ....℥ii | 60
M. Sig.: Drink.

As I have previously stated, I have had no ill effects from administering thymol, although a few cases have complained of dizziness and a sensation of fainting, but it has gradually passed off; it is, as we know, a very insoluble drug except in spirits and oils and therefore is not absorbed in sufficient quantity to cause toxic effects, besides which the saline purge given shortly after the last dose hurries it out of the system although sufficient time has been given the thymol to act on the parasites, and besides this there is no doubt that sodium or magnesium appears to be an antidote.

A remarkable fact and one which confirms me in the use of thymol is the immediate relief given by the first administration of the drug, from the severe headache and other mental symptoms, the patient next day feeling much brighter and better. Bentley recommends and prefers betanaphthol to thymol. I have not tried this drug as yet, being so far satisfied with my results from thymol, but I intend giving it a trial and comparing the results.

PROPHYLAXIS.

In this island the two chief factors in the causation of this disease are (1) muddy and infected drinking water; (2) soil pollution and infection through the skin. With regard to the first, it has been doubted whether this factor is a true one, yet I have had two cases of this disease in which there was no history of dermatitis, the patients being fairly well to do and not exposed to the second method of infection, but they admitted that the first cause might be the real one, as the water supply was obtained from shallow wells, liable to infection and especially during the rains was often muddy.

However, there are only three methods of prevention, viz.: 1, prevention of water infection; 2, prevention of soil infection; 3, treatment of all cases of the disease.

The two last are the chief ones. In this island the disease is widespread throughout all the districts, especially on the estates and in certain villages, hence the chief essential is the prevention of the fecal contamination of the soil in order to eradicate the disease; the promiscuous depositing of feces near the huts and villages and in the fields should be prevented, but owing to habit and the low intelligence of this class, it seems an impossibility. On all estates where huts are provided for the laborers and other families easily accessible privy accommodation should be provided, pits and trenches would do, which could be filled in from time to time and fresh ones opened. Another point is to try to destroy all ova and larvæ on heavily infected fields by ploughing the earth over and burning bush fires over it and replanting, but as most of the cultivation here is cocoa this is an impossibility; these cocoa groves are the chief infected areas, as here the ova have the ideal humidity, shade and temperature for their growth and development. The people should, therefore, be made acquainted with the danger of depositing feces promiscuously and thus infecting the soil and the liability of their acquiring the disease owing to the nature of their work, barefooted. The next point is the proper examination and treatment of all cases of the disease. On all estates and in villages an examination of all cases of dyspeptic troubles, dermatitis and anemia should be made and the feces examined and if the ova are found, immediate treatment of the case begun so as to prevent their becoming a source of danger to others who are not infected. This can not be done without an outlay on the part of the estate owner or the government itself, but there is no doubt that to thoroughly eradicate this disease such measures must be adopted; otherwise the treatment of cases individually is of little use, for as soon as they are cured and go back to their work, they are reinfected again.

DISCUSSION.

Dr. V. A. Latham, Chicago, said that the southern parts of this country were now confronted with this condition. In patients with ankylostomiasis the whole system stops developing; they are anemic, frail and almost infantile in their actions and characteristics.

Dr. Eugene Talbot, Chicago, said that two or three similar cases have occurred in this country, but not enough to warrant the conclusions brought out by Dr. Leonard. One occurred lately in southern Illinois.

THE PREVENTION OF SUMMER DIARRHEA.*

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During the hot summer months, the mortality from diarrhea among infants and young children is very great. Attention has frequently been called to this during the last five years, and much has already been accomplished by the health officials of the large cities of the United States in the prophylaxis of summer diarrhea.

Summer diarrheas are due chiefly to two causes, unclean food and hot weather. Bacteria of various sorts, whether introduced from without in the food, or already present in the intestine, are undoubtedly the exciting causes; but they seem unable to act deleteriously until the vital resistance of the child has first been decidedly weakened by protracted heat or humidity. Hot weather may also bring about deterioration of the milk, which forms the baby's usual food, by favoring the increased production of bacteria in the milk.

As the chief cause of what Dunn[1] so aptly calls "thermic diarrhea" is the heat, our efforts in the prevention of summer diarrhea must be directed toward overcoming the heat, so far as is possible. On the appearance of the first sign of any gastrointestinal derangement, all milk must at once be stopped and barley water or whey given.

Parents, educated or ignorant, poor or rich, must all be taught many things, among others, to bathe infants regularly and often; to keep excessive clothing off; to keep them cool and in the open air; not to disturb them unnecessarily, for playing or petting, so that they secure sufficient sleep; to attend to soiled napkins early; and to realize the importance of keeping off flies. Correct breast and bottle feeding, the correct frequency of feeding, the correct quantity to be given at correct intervals, the correct cleansing of nipples and bottles, the furnishing of a "clean" milk, the precautions necessary to keep it clean, etc., must be taught and must be so clearly expressed that they are plainly understood by all.

This is perhaps best accomplished by the judicious distribution of printed pamphlets containing instructions to mothers for the care and feeding of infants during the heated term. Of the fifteen largest cities of the United States, all containing over 250,000 inhabitants, such booklets are now distributed only by nine: St. Louis, Baltimore, Cleveland, San Francisco, Cincinnati and Pittsburg not as yet issuing any. Four cities have them printed in several languages: Chicago, in English, German, Bohemian, Polish, Swedish, Norwegian, Italian and Yiddish; Buffalo, in English, German, Polish and Italian; New York, in English, Italian, and Yiddish; and Milwaukee in German and English. Philadelphia, Boston, New Orleans, Detroit and Washington have the pamphlets printed in English only. Those distributed in Boston are dated 1879: those in Chicago, 1895, and those in New Orleans, 1899. Those now issued in New York and Washington were printed in 1904; those in Philadelphia, in 1905.

I wrote to the health officials of the nine cities containing from 150,000 to 250,000 inhabitants, but received no answer from Newark, Louisville, Indianapolis or Kansas City, which cities, I presume, do not issue any such pamphlet. St. Paul does not, either. In Minneapolis and Jersey City the pamphlets are printed in English only; in Providence, in English, French and Italian; and in Rochester, in English, German, Italian and Yiddish.

It would seem advisable to have special "milk" courses given in the public schools, the high schools especially, and in the medical schools and hospitals, for the instruction of growing children, physicians and nurses. The fact that clean milk can be procured will then be recognized. In cities in which such milk is obtainable, as the result either of municipal or private enterprise, the public will notice the difference between ordinary dirty milk and that receiving certificates from a milk commission such as is already in existence in many cities. This milk is kept up to standards which are vouched for by an expert bacteriologist, an expert chemist and an expert veterinarian. Such certified milk must be free from pathogenic micro-organisms and contain not more than from 10,000 to 30,000 to the c.cm., varying in several cities; its specific gravity must be between 1,029 and 1,033; its reaction must be neutral or faintly acid; its proteid should vary between 3.5 and 4 per cent.; its sugar between 4.2 and 4.8 per cent.; its fat between 3.5 and 4.5 per cent.; and it must be free from impurities, coloring matters and chemical preservatives. Besides, the condition of the dairy and the cows must be kept excellent.

In order to supply such clean milk to rich and poor alike, it would be well for every large city to acquire a dairy in the outskirts of the city, to be run on modern methods, under the guidance of a milk commission. Such a dairy might come under the jurisdiction of the municipal health department, and the city bacteriologist could easily watch that the milk and cream there prepared be kept up to the standard required. Each city could then supply clean milk to its citizens, and a municipal laboratory might be established for the preparation of mixtures which could be ordered by any physician on prescription blanks, free, or at a nominal price to the poor, at ordinary prices to those able to pay.

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* Read in the Section on Diseases of Children of the American Medical Association, at the Fifty-sixth Annual Session, July, 1905.

[1] Charles H. Dunn: "Etiology and Classification of the Summer Diarrheas of Infancy." Archiv. of Ped., June, 1905.

Should the powers that be object to the expense of such an undertaking, such a dairy, and possibly laboratory also, could be established by private subscription for the use of the poor only. Something like this was attempted in St. Louis last summer. As, at that time, there were no stringent regulations to standardize the cream and milk used, the purity of the mixtures prepared may be questioned. Rules have since been adopted, however, by the St. Louis Milk Commission, which will bring the milk and cream up to the standards maintained by the milk commissions of Eastern cities. While these modified mixtures have been distributed in St. Louis to anyone bringing a physician's prescription, milk funds, limited in distribution to the patients of certain hospitals or dispensaries, have for some years been in operation in Boston, Baltimore and Newark, with success.

In New York and Philadelphia, Mr. Nathan Straus gave the plants in which are prepared the modified mixtures distributed in both cities. Unfortunately, he has insisted on the pasteurization of all mixtures. Recent researches by Pennington[2] prove that commercially pasteurized mixtures, though prepared from clean milk and cream, contain after pasteurization more bacteria than before. Bergey,[3] Evans and Cope[4] have also shown the practical uselessness of pasteurization and sterilization, when performed more than from four to eight hours before the mixture is to be used. These researches do not, however, reflect on home pasteurization, correctly performed, in closed, filled bottles, when for any reason it is feared that the milk is not clean. How much better off would the community be, were we able to furnish a clean milk to all, so that neither pasteurization nor sterilization need even be thought of! Sterilization causes decided changes, those which occur whenever milk is boiled, and should never be employed; while pasteurization, always an iniquity, though occasionally a necessary iniquity, can also be dispensed with when clean milk and cream are used.

The simplest method for distributing milk and feeding infants in hot weather is that established in Rochester, in 1900, by Dr. George W. Goler. His efforts led to the furnishing of a clean milk and from that time pasteurization has been omitted. Several months ago, an association for the improvement of the milk supply of New York City was formed by 40 of the largest milk dealers, to assist the health department to secure clean milk. This society intends to educate the farmers and then to inspect the dairies regularly.

After studying the municipal pamphlets already in existence, I have prepared the following sample pamphlet for distribution by municipal health departments. In this I must acknowledge my indebtedness to the departments of health of Rochester and of New York City.

On the outer cover should be the name of the city, with the words "Health Department," "Department of Health," or "Bureau of Health," followed by the title of the pamphlet "Instructions to Mothers for the Care and Feeding of Young Children During the Hot Weather."

Inside the cover should be the following:

Clothing.—During the very hot weather infants should wear only a napkin and a thin gauze shirt. An abdominal binder, of thin flannel, may be worn until the child is six months old.

No infant should ever wear starched, stiff, uncomfortable clothes; everything should be loose.

Clothes worn during the day should be washed and hung out to air at night, while those worn at night should be washed or aired during the day.

Bathing.—Every young child needs at least one tub bath every day. On very warm days babies should be sponged two or three times a day with luke warm or cool water, containing a teaspoonful of salt to a pint of water, or a little alcohol or vinegar.

Poorly nourished infants should also receive a mild general rub with sweet oil once daily, after the morning bath.

The baby should be bathed before feeding; never bathe a child soon after feeding.

Talcum powder may be used freely after the bath. If slight chafing occur, stop using the powder and smear the parts well with boric ointment; if the chafing persists, consult your physician.

Fresh Air.—Fresh air is of vital importance. Keep the windows open. Never keep a child in a close or crowded room.

Have the child in the open air all day during the hot weather, out of the sun, protected from strong winds, bright sunlight and flies.

Whenever possible, if advised by your physician, take a trip on the water, to the country or seashore. Trolley rides are of value, provided you protect the infant from strong winds.

Instead of sweeping the baby's room, mop furniture, walls and floor with a moist cloth. This does not raise dust, which might contain germs.

Sleep.—Every young child should have twelve hours sleep at night. Naps of about two hours, morning and afternoon, should be insisted on until the child is 3 years old.

Each child should sleep by itself, in a crib or coach; this is most important in warm weather, when the heat of the mother's body, lying near, keeps the baby too hot.

Soiled Napkins.—Napkins should be changed frequently, just as soon as soiled. They should be placed in some covered receptacle, in water, and should be washed and boiled as soon as possible.

Never use oilcloth or waterproof materials for napkins; they keep the child's body hot and moist.

Do not wash or dry napkins in the room occupied by the baby.

Flies.—It is important to keep flies away from children and their food. For flies come from dustbins, manure and refuse heaps, readily carrying germs to children and into their food, when it is left uncovered. Windows and doors should always be screened and the baby's crib should be covered with mosquito netting. Whenever the child is taken out, the coach should be covered with netting to protect the baby from mosquitoes and flies.

Breast Feeding.—Always nurse your baby unless your physician advises you not to.

Keep your nipples scrupulously clean, washing them with cool boiled water before and after each nursing.

Each breast should be nursed at alternate feedings; both breasts should not be given the infant at one feeding unless specially ordered by your physician.

The mother's bowels should be moved once daily; she should take three plain, well-cooked meals a day, of milk, cereals, meat and vegetables. She needs plenty of milk and water; but she should not take tea, strong coffee, or liquor.

In very hot weather, or when overheated, she should "milk" her breasts, throwing away several teaspoonfuls of her milk before allowing the child to nurse.

Bottle-Feeding.—Procure the cleanest, freshest milk possible. Where possible, use certified milk. Do not skim the milk. Clean milk and cream are delivered in covered bottles. These should never be allowed to stand uncovered; nor should milk ever be carried in an uncovered receptacle. For dust or flies, both bearing germs, may enter it. Milk and cream should always be kept cold; in a refrigerator when possible; if you have no ice, wrap a cloth wrung out of cold water around the bottle.

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[2] Mary E. Pennington: "Comparison of Pasteurized and Raw Milk," read before the Philadelphia Pathological Society, Feb. 23, 1905.

[3] D. H. Bergey: "The Influence of Pasteurization on the Chemical and Physical Qualities of Milk," read before the Philadelphia Pathological Society, Feb. 23, 1905.

[4] Joseph S. Evans, Jr., and Thomas A. Cope: "The Inhibitory Power of Unheated Milk on Bacteria," read before the Philadelphia Pathological Society, Feb. 23, 1905, and before the Philadelphia Pediatric Society, May 9, 1905.

Have the baby weighed every week up to six weeks of age; then every two weeks, regularly; and feed it according to the following table:

2 Tablespoonfuls, 1 ounce; 4 teaspoonfuls, 1 tablespoonful.

Weight.	Milk.	Barley Water.	Granulated Sugar.	Intervals between feeding	From 6 a. m. to 6 p. m.	From 6 p. m. to 6 a. m.
From 6 to 8 lbs Under 3600 g.	1 oz....	2 oz....	½ teaspoonful	2 hours	6 bottles.	2 bottles.
9 and 10 lbs. 3700-4500 g...	1½ oz..	2½ oz..	½ teaspoonful	2 hours	6 bottles.	2 bottles.
11 to 14 lbs. 4600-6400 g...	2½ oz..	2½ oz..	¾ teaspoonful	2½ hrs.	5 bottles	2 bottles.
15 and 16 lbs. 6500-7300 g...	3½ oz..	2½ oz..	1 teaspoonful..	2½ hrs.	5 bottles.	2 bottles.
17 and 18 lbs. 7400-8200 g...	5 oz....	2 oz....	1 teaspoonful..	3 hours	5 bottles.	1 bottle..
19 and 20 lbs. 8300-9000 g...	8 oz....	0 oz....	1 teaspoonful..	3 hours	5 bottles.	1 bottle.
21 and 22 lbs. 9100-10000 g..	10 oz...	0 oz....	½ teaspoonful	2 hours	5 bottles.	0 bottle.

In every case make one-tenth of the mixture lime water; this may be procured at any drug stone. It is added to prevent vomiting.

Barley water is made by boiling whole barley, two tablespoonfuls, or barley flour, one tablespoonful, for 15 or 20 minutes, in one pint of water; strain and add boiled water to make one pint again. This is used both to dilute the milk and to help the baby digest the cow's milk.

Should the baby fail to gain in weight at the end of two weeks, clean cream may be added cautiously, beginning with one teaspoonful to each bottle, and gradually increasing. Your physician will tell you how much cream you may add; as a rule, more than one-tenth of the mixture should never be added. (For example, a baby weighing 8 pounds gets 3 ounces, 6 tablespoonfuls, or 24 teaspoonfuls, at each feeding. More than one-tenth of this quantity, i. e., 2½ teaspoonfuls, of cream should never be added.) If you are not sure that the cream is clean, boil it; and boil the sugar and water, too; then add them to the clean milk when cold.

Should the baby develop vomiting or diarrhea, stop all milk at once and give barley water only until whey can be made. If your physician advises it, prepare the whey by adding one teaspoonful of liquid rennet or essence of pepsin to one pint of milk which has first been heated. Or dissolve one rennet tablet in one ounce of cold water and add this to one quart of milk; then heat it to about 100 F., and allow it to stand. When the curd has become solid, beat it up well with a fork, and keep it warm for 10 or 15 minutes longer. Then strain and put the whey on ice.

Some days later, if your physician advises it, add one teaspoonful of milk cautiously, to each bottle, after having heated the whey up to 155 F., to stop the further action of the rennet. The quantity of milk or cream to be added, later, is to be regulated by your physician.

Whoever prepares the food should wash her hands regularly before beginning to make the mixture.

Before each feeding the bottle is heated in water, resting on a saucer, until the water under and about the bottle begins to boil; it should not be allowed to boil. The bottle is then removed and allowed to stand, to cool off somewhat before the baby gets it.

Before taking the breast or bottle, the baby's mouth should be cleansed with cool boiled water. Between feedings every child, whether breast or bottle fed, should be given cool boiled water to drink, frequently, from several teaspoonfuls to a tablespoonful at a time.

No child should be fed more frequently than here given, nor should a larger quantity be given at any feeding without the special advice of your physician. When any milk remains in the bottle, always throw it away; do not heat it over again.

When the warm weather begins, it is a wise precaution to reduce the strength of mixtures given bottle-fed babies, in fat especially, as a child is often unable to digest its regular food during hot weather. *This alone may prevent illness.*

All nursing bottles should be cleansed thoroughly, first with cold water, then with washing soda and hot water; and then rinsed well and boiled before using. Nipples should be turned inside out and scrubbed in cool boiled water and borax, 10 grains to the ounce, with a brush used for this only. All nipples should be boiled once daily. At least six bottles are needed. After cleansing them, stand them upside down on a shelf. The nipples should be kept in cool boiled water, in a covered receptacle. Bottles with twisted necks and nipples with tubes should never be used.

Weaning.—When the child is 10 or 12 months old, it should be weaned, except in hot weather, when the breast or bottle may be continued until the autumn. Weaning is accomplished by substituting pure milk, or a modified milk mixture when ordered by your physician, in a cup or glass, for the breast or bottle, once daily at first; then twice, increasing gradually until the child only takes milk by the glass.

Feeding After First Year.—At 1 year of age, two, and later four or five meals a day may be given, gradually increasing the amount at each feeding. The meals should be composed of some of the following: Milk, stale bread or toast with butter, soft boiled eggs, strained beef, mutton or chicken broth, and cereals (oatmeal or hominy cooked three hours; cornmeal cooked two hours; or farina cooked one hour).

At 2 years of age meat may be added cautiously. The child should then take only three meals a day, with water or milk regularly between meals. Supper should consist of milk, bread and butter, and a cereal.

No child should ever be given tea, coffee, or liquor; fried food of any kind; griddle cakes, sausage or pork; heavy, doughy puddings, fresh bread, cake or pastry; unripe, sour or over-ripe fruit; bananas; very sweet preserves, popcorn, candies, etc.

Too much food is always worse than too little, especially *in hot weather.*

Never give a baby sleeping drops, anodynes or soothing syrups.

Never allow children to creep about on the floor; for there is danger of cold draughts of air, and of dust containing germs.

Let the baby alone; don't disturb it unnecessarily, to play with it, pet it, or handle it.

Have the baby vaccinated before it is 1 year old.

Summer Diarrhea.—If the baby passes several loose stools, with or without vomiting, the child needs medical attention.

Stop all milk food at once, and give the baby boiled water or barley water, if less than 1 year of age; or whey if over 12 months, until it can be taken to a physician.

Even simple cases of vomiting and diarrhea should never be neglected, for the disease is often mild at first, without any sign of illness other than diarrhea; yet, in a few hours, the baby may be dangerously ill.

If you have no physician and there is no hospital near, telephone to the Board of Health and a district physician will be notified.

The objection which can be raised to this method of simply diluting milk is, of course, the very low fat percentage in the mixtures; but this, as a rule, is just what is needed during hot weather.

When the baby fails to gain, small amounts of cream can easily be added. The objection to this, however, is the fact that the cream, in hot weather especially, will contain far more bacteria than the milk. This objection may be overcome by boiling the small quantity of cream separately, by boiling sugar and water, and by adding them, cold, to the clean milk. If the baby then has indigestion it may be due to too much fat, but it is more probably due to the infant's inability to digest the caseinogen of cow's milk. This, however, is much decreased by the use of whey, which can be easily prepared. The proteids can then be raised easily, with a very gradual increase in the fats, by adding milk; or the fats may be raised rapidly by adding cream.

The manner of distributing these pamphlets also needs consideration. They should be given away by both district physicians and medical inspectors. Whenever, in hot weather, either has occasion to visit a home in which there are children under 3 years he should not forget to leave a pamphlet. The pamphlets should also be sent to dispensaries, and milk and ice stations for free distribution. Some should also be sent to every physician in the city, for the benefit of his patients, and he should be informed where more can be procured. In cities with a large foreign population much can be done by having the pamphlets printed in several languages. It seems important also to have these instructions reach the well-to-do as well as the poor, for it is only by furnishing clean food and educating mothers and nurses that summer diarrhea can eventually be overcome.

225 South Twentieth Street.

DISCUSSION.

DR. C. F. WAHRER, Fort Madison, Iowa, declared that every case of summer diarrhea is a case of itself; there are so many known and unknown factors such as surroundings, predisposition and food. Two of the principal reasons of an increased number of cases in the summer are increased putrefactive changes in foods of bacterial origin, and the worry and disturbance to the nervous system. He said that he went out to see milking done at one of the finest hotels in Yellowstone Park. The cows were deep in the mire that they made themselves. He saw the milkman come out, unkempt, unwashed, pick up a milk stool, give a cow a kick, stroke the udder and begin to milk. The whole place was literally covered with what in the Anglo-Saxon would be called "cow dung." Much of the milking on farms, Dr. Wahrer believes, is done in the same manner so that the milk is mixed with the filth, hence it is very difficult to control the supply of milk to bottle-fed children. In the larger cities mothers who are subjected to work akin to that of the beast of the field are nursing their children. Such a mother can scarcely give healthy milk, and the unsanitary mode of life of the mothers should be changed. Dr. Wahrer agreed with Dr. Ostheimer that education is necessary. He does not think any mother would transgress the rules of cleanliness, etc., if she were taught the importance of the care of the milk supply.

DR. L. M. SILVER, New York, said that in New York City there is a list of charitable summer work for children. Mothers interested are given cards of admission. Each mother is given a printed slip with instructions for the care of milk and for the preparation of barley water.

DR. KATE LINDSAY, Boulder, Colo., stated that her practice has been mostly in the farming districts, and that there the ignorance with reference to infant feeding is quite as lamentable as in the cities. As an illustration she related one of her cases. She was called to see a child with summer diarrhea. At the same time a veterinarian was called to see a colt. The farmer was in a great rage because his best mare had been driven and overheated. At the same time he required his wife to cook for sixteen men and to sweat over the fire. Dr. Lindsay examined the milk and found it deficient in every way. Education along this line is needed among the farmers of the country. Dr. Lindsay would not discourage efforts to educate the people of the slums, but asked why we should not take care of the best as well as the worst in the land.

DR. G. BLUMER, San Francisco, said that there are a few cases of summer diarrhea in San Francisco, occurring usually after the occasional hot spells in that city.

DR. ARTHUR W. FAIRBANKS, Boston, asked Dr. Ostheimer how long he keeps the children on a cereal mixture. There is always some uncertainty in Dr. Fairbanks' mind on this point. He also asked what the indications are for taking the child off the milk, whether it is fever, temperature or general septic signs.

DR. A. C. COTTON, Chicago, said that all physicians appreciate the idea of the education of the laity by means of pamphlets. He believes that health department work has obtained some of its best results through the circulars issued to mothers. Dr. Cotton would put such instructions in a place of honor and have the mother taught to look at them as her lode star. The mothers should be taught particularly that there is a beginning to this trouble, and that often this is in the method of nursing or feeding. The little regurgitation which comes with too rapid feeding will cause indigestion and summer diarrhea follows. For summer feeding the food should be diluted. A lower caloric value of the food is needed. In artificial feeding we are not feeding according to nature, but according to experience, and attenuated food is more easily digested.

DR. JOHN LOVETT MORSE, Boston, declared that he objected to the title, "Prevention of Summer Diarrhea." He thinks it ought to be "Prevention of Diarrhea in Summer." He stated that it should not be forgotten that whey is milk and that bacteria will grow in one as well as in the other.

DR. MAURICE OSTHEIMER, in reply to a question, stated that the length of time the child is kept on barley water depends on the symptoms. It may be from twenty-four to forty-eight hours; in extreme cases perhaps seven or eight days, but in these cases he should add brandy or whisky, so that the baby gets some nourishment. In most cases, however, he gives no alcohol while on barley water. On the first sign of gastrointestinal derangement he would stop the milk, even if for only twenty-four hours. As Dr. Cotton has said, the regurgitation of food is one of the first signs of trouble and ought to attract the mother's attention. In reply to a question Dr. Ostheimer stated that when pasteurization is done in bulk the bacteria are increased tremendously. Whether they are the same bacteria which are found in the beginning he does not know; whether they are pathogenic is another question; he does not believe that they are. In Philadelphia a great deal of work has been done in this connection, and the importance of keeping milk clean has been proved.

FIFTEEN CASES OF SUMMER DIARRHEA.*

JOHN C. COOK, M.D.

CHICAGO.

The fifteen cases of summer diarrhea which I wish to present, have been selected from the two hundred and fifty cases of children's diseases that came under my observation at the Jackson Park Sanitarium, Chicago, during the months of July and August, 1904. For the sake of brevity I will divide these cases into two classes. The first class comprised eleven cases of a mild type, the records of which have been combined in such a way that they will serve as a standard of comparison by which to estimate the value of the findings in the remaining cases. The second class comprises four fatal cases which are of special interest because of the bacteriologic and microscopic findings both during the clinical course and at postmortem.

As briefly as possible, I will relate the findings to which I wish to call attention. The average age of these infants was nine and one-third months. Personal and family history is what would be expected in a class of charity patients, breast fed by poorly nourished mothers, and artificially fed on every sort of milk and infant food. The average course of temperature is shown in Chart 1; it varied from 97 to 102.5 F., with a total average of 99.4. Vomiting was present, but was not by any means a constant symptom. The frequency of

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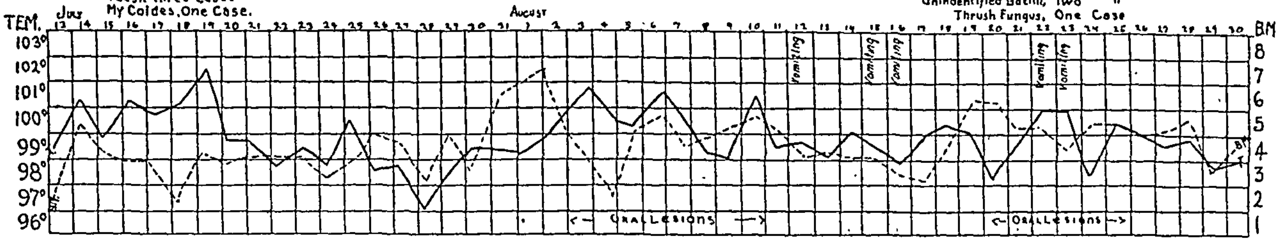
* Read in the Section on Diseases of Children of the American Medical Association, at the Fifty-sixth Annual Session, July, 1905.

CHART I

MICROöRGANISMS OF THE STOOLS
Pneumococcus, Seven Cases
Sarcina, Four Cases
Colon Bacillus, Seven Cases
Unidentified Bacilli, Ten Cases
Yeast, Three Cases
My Coides, One Case.

MICROöRGANISMS OF THE THROAT
Pneumococcus, Seven Cases
Sarcina, Four "
Colon Bacillus, Six "
Yeast, Nine "
Unindentified Bacilli, Two "
Thrush Fungus, One Case



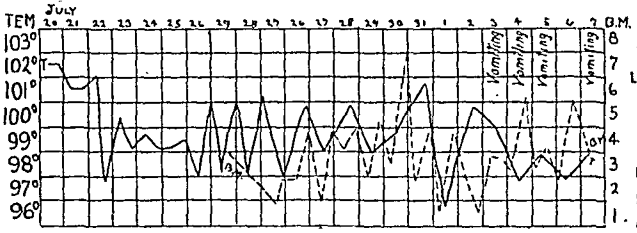


CHART II

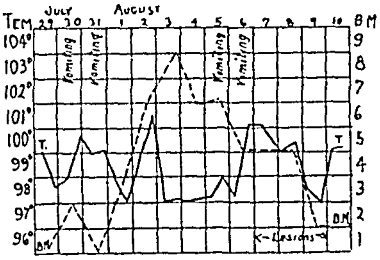
MICROSCOPICAL AND BACTERIOLOGICAL FINDINGS POST MORTEM
Lungs — Bronchopneumonia
Kidneys — Diffuse Parenchymatous Nephritis
Small Intestines — Ulcerations

Blood — Pneumoccus
Peritoneal Fluid — Pneumoccus
All Thoracic and Abdominal Organs — Pneumococcus

CHART III

MICROSOPICAL AND BACTERIOLOGICAL FINDINGS POST MORTEM
Lungs - Bronchopneumonia
Kidneys - Diffuse Parenchymatous Nephritis

Bacteriological Examination
Lungs — Pneumococcus
Other Organs — Sterile



MICROöRGANISMS OF THE STOOLS:—
Colon Bacillus
An Unidentified Bacillus
Pneumcoccus
Thrush Fungus

MICROöRGANISMS OF THE THROAT:—
Sarcina
Pneumcoccus
Thrush Fungus
Colon Bacillus

CHART IV

BACTERIA OF THE THROAT:—
Colon Bacillus
Sarcina
Pneumococcus

BACTERIA OF THE STOOLS:—
Colon Bacillus, Sarcina, Pneumococcus,
Red Pigmenting Bacillus of the Colon Croup
Typhoid Bacillus, Streptococcus

REPEATED WIDAL TESTS—POSITIVE

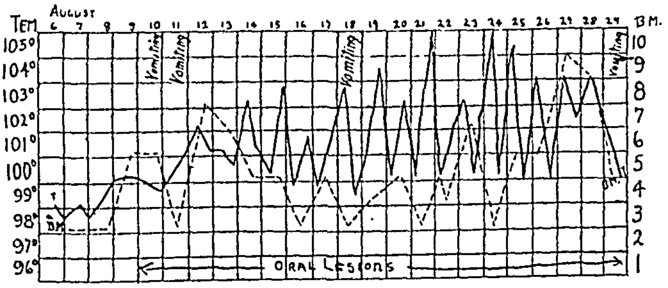
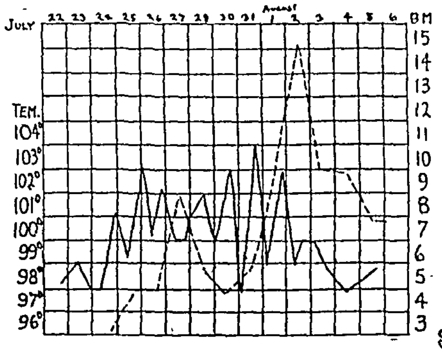


CHART V



NOTE

In the stools of this case a Red Pigmenting Bacillus of the Colon Group was isolated. This pigment stained the stools blood-red but no blood was found upon microscopical examination.

bowel movements also I have placed on Chart 1. They varied from two to seven a day, with a total average of four. Lesions were present in the mouth in three of the eleven cases, but were mild and readily yielded to treatment. The differential blood findings were as follows: Small lymphocytes 27 per cent., large lymphocytes 16 per cent., neutrophiles 53 per cent., eosinophiles 2 per cent., myelocytes 2 per cent. The parasitic and bacteriologic findings of the stools were as follows: The pneumococcus was present in seven cases, sarcina in four, colon bacillus in seven and unidentified bacilli in ten, yeast in three and mycoides in one, with a total of three varieties in each case. Of the bacteriologic findings of the throat, the pneumococcus was present in seven cases, sarcina in four, colon bacillus in six, yeast in nine, unidentified bacilli in two and thrush fungus in one. There was a total average of three varieties in each case.

I will now take up the findings of the second class of cases. The first of these was a male, aged 6 months. No history was obtained; the child was under observation from July 16 until his death, August 7. The temperature range, which is shown on Chart 2, was moderate, from 97.8 to 103.5 F., averaging throughout the course of the disease 99.6. As is also seen on Chart 2, there was a range of from two to seven bowel movements daily, with an average of four. Lesions in the mouth were constantly present. Vomiting occurred in the last five days only. Neither blood nor bacteriologic examinations of the stools and throat were made during life, but the microscopic and bacteriologic examinations postmortem are important. The microscopic examination of the lungs showed well marked bronchopneumonia. In the kidneys a diffuse parenchymatous nephritis had developed. The small intestines showed an exfoliation of the epithelial and mucous coats with a round cell infiltration of the muscular layer. Bacteriologic examination showed the presence of the pneumococcus in every organ, as well as in the blood and peritoneal fluid.

The second of the severe cases was a female aged three months. This case was under observation from July 29 and came to autopsy August 10. The child had been fed on a proprietary food, otherwise the history was negative. As can be seen by Chart 3, the temperature course was very mild, between 98 and 101.5 F., averaging about 99 degrees. The bowel movements averaged six a day, reaching the highest number, nine, six days before the child died. Vomiting occurred three times. Lesions of the mouth were present during the last days of the disease. The differential blood findings were as follows: Small lymphocytes 38 per cent., large lymphocytes 20 per cent., and neutrophiles 42 per cent. There was in all, four varieties of micro-organisms in the stools, the colon bacillus, an unidentified bacillus, the pneumococcus, and the thrush fungus, which was very abundant. In the throat also four varieties were demonstrated—the colon bacillus, pneumococcus, sarcina, and thrush fungus. An autopsy was held, which resulted in the disclosure of a bronchopneumonia and a parenchymatous diffuse nephritis. The bacteriologic examination of the organs showed the presence of the pneumococcus in the lungs. The other organs were sterile.

The third of the three cases was a female aged 2½ months. This child entered the sanitarium August 5 and died August 29. The mother of the child had been in an insane asylum with puerperal insanity since the birth of the infant, and the child had been fed on Mellin's food up to the time she came under observation. The temperature course was of a septic character, ranging from 98 to 106 F. (Chart 4), averaging about 101 degrees. The bowel movement ran up as high as ten, with an average of six. Vomiting was present, but was not of frequent occurrence. Mouth lesions were constantly present. The differential blood count was as follows: Small lymphocytes 35 per cent., large lymphocytes 15 per cent., neutrophiles 47 per cent., eosinophiles 1 per cent., and myelocytes 2 per cent. Repeated Widal tests were positive. The bacteriologic examination disclosed the specific trouble to be typhoid. The bacteria of the throat were colon bacilli, sarcinæ, and pneumococci three varieties. The bacteria of the stools were colon bacilli, a red pigmenting bacillus of the colon group, typhoid bacilli, sarcinæ, pneumococci and streptococci, six varieties altogether. A postmortem was not obtainable.

The last of the severe cases was a female aged 7½ months. This child came under observation July 22, and died August 5, fifteen days after entering. In this case there also ran a septic temperature which varied from 98 to 104 degrees. Bowel movements were frequent, once reaching fifteen during twenty-four hours. Vomiting occurred only twice and was not severe. No mouth lesions were present. The blood examinations were not made. The bacteriologic examination of the throat was also omitted. One bacteriologic finding in the stools makes this case worthy of notice. There was found a red pigmenting bacillus of the colon group that developed a red pigment so rapidly in the intestines that the feces and mucous secretions were stained blood red. Several bloody stools were recorded and twice the nurse in charge reported a hemorrhage from the bowels, but no blood was found on microscopic examination. A full description of the pathogenesis of this bacillus has not been furnished me, but the clinical significance of such a finding is worthy of some comment. An autopsy was not allowed in this case.

As a result of the examination of the above cases, the histories of which have been briefly reviewed, some general deductions may be made regarding the etiology, symptomatology and treatment of summer diarrheas of children. It will be remembered that Booker, in 1897, made the statement that no single micro-organism is found to be the specific exciter of summer diarrhea of infancy, but the affection is generally to be attributed to the results of the activity of a number of varieties of bacteria. While generally speaking, the statement is undoubtedly true, however, it does seem possibly and probably true that some of the well-known pathogenic organisms, such as the typhoid bacillus, pneumococcus and streptococcus, gain entrance to the general circulation through lesions in the gastro-intestinal tract, and give rise to septicemia, and are the immediate cause of death; that these atria of infection are produced by the local action of less toxic micro-organisms, such as staphylococcus, colon bacillus, yeasts, and thrush fungus; and that the toxins which are generated by the saprophytic action of all of the micro-organisms in the intestines, tend both to lower the resistance of the child and to mask the symptoms of the specific intoxication. It is further apparent that the increased frequency of vomiting and bowel movement is more often due to the reflex action of septicemia and sapremia than to direct intestinal irritation; and that the gross appearance of blood in the stools should always be corroborated by a microscopic and bacteriologic examination.

Finally, if the above conditions of sepsis and sapremia be true in these cases, then the problem of treatment resolves itself into a question of maintaining the general resistance of the child and of neutralizing the specific intoxication by such means as prophylactic cleanliness, nutritious diet, frequent enemas to keep up the balance of body fluid, quinin inunctions as a general tonic, and keeping the child out of doors on a firm bed, instead of on a luxurious crib or cab in a stuffy, hot room.

I wish to acknowledge valuable assistance rendered me in this work to Drs. J. J. Gill and W. G. Baine.

DISCUSSION.

Dr. M. Michael, Chicago, said that with Dr. Coone and Dr. Weaver he undertook the study of 97 cases of summer diarrhea in children. Dr. Weaver took up the bacteriologic side of the question, and Dr. Coone and Dr. Michael the clinical. For collecting the stools a sterile wide-mouthed bottle partly filled with salt solution was used; this was tightly corked and two glass tubes were passed through the cork. One was stuffed with cotton and to the other was attached a rubber tube and to the end of this a catheter. The catheter was protected by a second tube in order to keep it sterile until inserted into the bowel. The apparatus was turned upside down and the second tube was gradually drawn back as the catheter was inserted. When the salt solution had run into the bowel the apparatus was turned down again and the stool passed through the catheter into the bottle. This was carried to the laboratory, and the Memorial Institute for Infectious Diseases of Chicago furnished the material for bacteriologic study. The dysentery bacillus was found in about 24 cases. Clinically the 97 cases could fairly well be divided into two groups. In the first group the toxemic symptoms predominated. There was high temperature, nausea, vomiting, restlessness, great nervousness and the children were very ill. In the second group the local symptoms predominated, the picture being one of ileocolitis. In these cases the stools contained much mucus and blood. The dysentery bacillus was found in the cases in which the stools did not show blood and in those in which the blood and mucus were found, but it did not occur in all the latter cases. They found also that cases of ileocolitis in which the dysentery bacillus was found did not differ in any way from those in which the bacillus was not found.

Dr. Arthur W. Fairbanks, Boston, stated that Dr. Cook's remarks may explain an experience a few years ago in a small hospital in Boston where they have a great many cases of very severe ileocolitis. The nurse reported that blood appeared in the stools of a patient, and Dr. Fairbanks directed the house officer to hunt with the microscope for blood, but it was not found. Later he saw one of the stools and it had the appearance of streaks of blood through it. He then requested the house officer to make the hematin test. The house officer reported that there was no positive reaction, and Dr. Fairbanks inclined to question the accuracy with which the test was made, but this bacillus mentioned by Dr. Cook, he thinks, may explain the occurrence.

Dr. J. C. Cook said that he was glad to have Dr. Michael give the method of collection. Good work was done by her and her colleagues and a valuable report made of it. The bacillus has been examined in a number of laboratories and has shown some peculiarities of growth and development; whether or not it is pathogenic is not yet known. It is believed to belong to the colon group. There is no literature on the subject so far as Dr. Cook has been able to find. It appeared twice in his experience and the quantity of blood or stain was so great that it might easily be mistaken for a hemorrhage of the bowels when there was no blood or ulceration present. In reply to a question Dr. Cook stated that it was a fatal case, and that he, perhaps, did not make very apparent the relation of the vomiting to the rise of temperature. The vomiting and bowel movements were very likely to occur together or within a few hours of one another, showing the condition of sepsis that might induce them rather than any bowel irritation. These children were for the most part fed after the most approved method.

Variable Liver.—Professor Mongour of Bordeaux has noticed that in malaria the liver is liable to vary in size from day to day. These variations seem to be proportional to the resisting powers of the organ. The prognosis of any acute or chronic hepatitis is better the greater the range and frequency of these changes in the size of the liver. In some cases the organ will seem to be atrophied one day and hypertrophied the next. He has recently called the attention of the Paris Academy of Medicine to the matter.

THE ANTI-MICROBIC ACTION OF IODIN.*

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PREFACE.

The uniform satisfaction given by the iodin catgut prepared after the method of Claudius,[1] which has been used by Dr. Nicholas Senn in his clinical work, led him to employ a solution of iodin for irrigation in infected wounds and also for hand sterilization. The results obtained demonstrated, clinically, the marked potency of iodin in solution as an antiseptic. Its continued use for several years has shown it to be far superior to any antiseptic previously employed.

In order to determine the absolute value of this solution, a series of experiments have been carried out on a number of different micro-organisms *in vitro.* A sufficient number of different organisms and a great number of tubes have been used. Therefore one is justified in assuming that the conclusions arrived at from a careful study of the series of experiments represent as nearly as possible the position of iodin in the family of antiseptics. When we try to make an accurate comparison between the members of this numerous family, however, we find we can not do so because of the widely different methods of procedure employed by the different investigators. In addition, the majority of the methods show one or more points of possible error. Not for the purpose of comparison, but with the idea in view of presenting the experimental findings of various men on the more important antiseptic substances, there has been incorporated in this research a short bibliography of antiseptics in general.

Bichlorid of Mercury.—Kyle[2] found that it took 1/1000 solution bichlorid ten hours to insure no growth of tetanus bacillus. Koch[3] determined that a 1/20000 solution killed anthrax spores in ten minutes. Klein,[4] however, found that anthrax spores were not influenced by a 1/10000 solution acting for one hour. Evans,[5] from experiments on *Bacillus anthracis* in liquid media, reported that a 1/15000 for one minute and a 1/20000 for thirty minutes were effective. In regard to the spores he found that a 1/1000 for fifteen minutes and a 1/1500 for one hour were effective. Likewise, a 1/1000 for five minutes gave growth. On *Staphylococcus pyogenes aureus,* the same author states that a 1/200 solution for fifteen minutes killed, while a 1/250 solution for one hour impaired vitality. Tarnier and Vignal,[6] using thread method of Koch, found that a 1/1000 solution for two minutes killed both *Streptococcus* and *Staphylococcus pyogenes aureus.* Harrington,[7] employing the same method, states that where the threads are moist an exposure of over fifteen minutes to a 1/1000 solution is necessary to kill the *Bacillus pyocyaneus,* while if threads are dry five seconds are sufficient. On *Staphylococcus aureus,* either on moist or dry threads, from five to ten minutes kills. On *Bacillus anthracis,* either dry or moist threads, an exposure to a 1/1000 solution for thirty minutes has no bactericidal effect. Hence, he states that bichlorid of mercury is a greatly overrated disinfectant. Burgess,[8] who also used the thread method in his experiments on *Bacillus coli communis,* found that a 1/750 solution for one minute was effective, as were a 1/2000 solution for five minutes and a 1/7500 for ten minutes. Sternberg,[9] from experiments on gonococcus, states that 0.005 per cent. bichlorid solution for two hours kills. He concludes that in bichlorid we have a germicidal agent of the highest value.

Carbolic Acid.—Kyle[2] found that the tetanus bacillus had to be exposed to a 5 per cent. carbolic acid solution for six hours in order to assure no growth. Cabbot,[10] on adding 5 per cent.

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* Work done as Fellow in Surgery at the Senn Laboratory, Rush Medical College.

1. Claudius: Deutsche Zeitschrift für Chirurgie, 1902, vol. lxiv, pp. 489-494.
2. Kyle: Therapeutic Gazette, Detroit, 1892, vol. viii, p. 163.
3. Koch: Mittheilungen aus dem k. Gesundheitsamte, vol. i, 1881.
4. Klein: Local Gov. Bd. Rep., London, 1885-6.
5. Evans: Guy's Hospital Report, London, 1890, 3 s., vol. xxxii, pp. 195-252.
6. Tarnier and Vignal: Arch. de méd. expér. et d'anat. path., Paris, 1890, vol. ii, p. 477.
7. Harrington: Boston Medical and Surgical Journal, 1903, vol. cxlviii, pp. 445-439.
8. Burgess: Lancet, London, 1900, vol. i, p. 1798.
9. Sternberg: American Journal of Medical Science, 1883, vol. lxxxv, pp. 321-343.
10. Cabbot: Boston Medical and Surgical Journal, 1879, vol. ci, p. 75.

carbolic acid to a putrefactive solution and then transferring several drops of mixture to an aseptic medium, discovered that after five seconds' exposure no putrefaction occurred in fresh tubes. Evans[5] found that on anthrax bacillus a 1/100 solution for five minutes, a 1/150 solution for fifteen minutes, and a 1/175 solution for thirty minutes, were effective. On the spores, he got a growth after four hours' exposure to a 5 per cent. solution. A twenty-four hours' exposure, however, was sufficient to insure no growth. A 1/40 solution on *Staphylococcus aureus* for fifteen minutes gave no growth. Burgess,[5] in his work on *Bacillus coli communis,* states that a 10 per cent. solution kills in one minute, a 2.5 per cent. in five minutes, a 1 per cent. in thirty minutes, and a 0.75 per cent. in one hour. Blyth[11] found that a 10 per cent. solution for four hours had no effect on anthrax spores. A twenty-four-hour exposure, however, prove deficient. He used the glass-rod method. On the gonococcus and micrococcus of abscess pus, Sternberg[9] found that the action of an 0.8 per cent. solution for two hours killed the organisms.

Alcohol.—From experiments on the germicidal effect of alcohol, Harrington[12] concludes: "Alcohol of any strength has absolutely no effect on anthrax bacillus; 60 to 70 per cent. alcohol is the most efficient strength against non-spore forming bacteria, i. e., *Staphylococcus pyogenes aureus* and *albus,* typhoid bacillus, bacillus of diphtheria, being usually effective in five minutes."

Salzwedel and Elsner,[13] using thread method, state that 55 per cent. (by weight alcohol) was most destructive to staphylococcus pus, requiring in fresh pus from five to six minutes to be effective. They state that this solution is not quite equal to a 1/1000 solution of bichlorid, but is as efficient as a 3 per cent. carbolic solution. Sternberg[9] found that with a two-hour exposure, a 95 per cent. alcohol was fatal to gonococci, while a 40 per cent. solution did the work on the micrococcus of abscess pus.

Hydrogen Peroxid.—In his work on the tetanus bacillus, Kyle[2] states that after a forty-eight-hour exposure to hydrogen peroxid the bacillus still grew. On the other hand, Gibler[14] finds, from experiments he has made with a 3.2 per cent. hydrogen peroxid solution in water on *Bacillus anthracis, Bacillus typhosus, Streptococcus pyogenes,* etc., that after some minutes of contact (exact time not stated) the bacteria could not be cultivated from bouillon, henc [illegible]

Formaldehy [illegible] 1/2000 solution of formaldehyd [illegible] *Bacillus pyocyaneus.* Pottevin[16] fi [illegible] formaldehyd to a liter of boui [illegible] *diphtheriæ, pyocyaneus, typhosu* [illegible] *nes aureus.* Burgess[8] concludes tha [illegible]: 1/30 solution is destructive in one minute, a 1/50 solution in five minutes, and a 1/150 solution in thirty minutes.

Lysol.—Burgess,[8] who included lysol in his experiments on *Bacillus coli,* found that a 1/10 aqueous solution killed it in one minute, a 1/30 solution in five minutes, a 1/250 solution in thirty minutes and a 1/300 solution in one hour.

Boric Acid.—Burgess[8] also found [illegible] on of boric acid was entirely wanting in [illegible] natter how long the exposure. Sternberg[9] c [illegible] from his work on gonococcus and micrococcus of abscess pus.

Phenic Acid.—On streptococci and staphylococci Tarnier et Vignal[6] state that a 3 per cent. aqueous solution of phenic acid is efficient in seventeen minutes, a 2 per cent. solution in eighteen minutes. Chamberland,[17] from his experiments, finds that anthrax bacilli are killed by a forty-eight-hour exposure to a 1/400 solution of phenic acid.

Salicylic Acid.—A 1/240 solution of salicylic acid for three minutes kills putrefactive organisms, according to Cabbot.[10]

Methyl Violet.—Stillings,[18] as his findings from experiments, states that methyl violet is three times as strong as bichlorid in its action on anthrax bacillus and quite as effective as it on st [illegible]

[illegible] e work of Pécholier (1883) on th [illegible] solution on bacteria: that of [illegible] (fumes of tobacco in 1888); and that of Vissalli (fumes of tobacco in 1888); and from added experiments of his own (nicotin in alcohol solution), says in conclusion that "nicotin does not appear gifted with very powerful antiseptic properties for 1/3 of a drop (sufficient to kill a pigeon in a few seconds) does not prevent the development of certain bacteria in 3 c.c. of bouillon." But he concludes from experiments of Tissinari on tubercle bacillus and spirillum of Asiatic cholera, and from his own on bacillus diphtheria that it attenuates the virulence of microbes. Junor[20] reports a case of tetanus cured by local application of infusion of tobacco.

Mercuric Cyanid.—Harrington,[21] using the thread method, found that a 1/1000 solution of mercuric cyanid had to act in thirty minutes to kill *Staphylococcus pyogenes albus,* while a three-hour exposure on *S. aureus* showed no antiseptic effect. Hence it is impractical.

Radium.—It was found by Van Buren,[22] from his experiments on *Bacillus typhosus, Bacillus pyocyaneus* and *Staphylococcus pyogenes aureus,* that radium, acting from eight to thirteen hours, was negative in antiseptic action. Pfeiffer[23] also shows its negative action on *Bacillus typhosus* and the cholera spirillum.

Collargol.—Fortesque-Brickdale[24] states "In solution of 0.5 per cent. and under, collargol has no bactericidal effect on *Streptococcus pyogenes* or *Staphylococcus pyogenes aureus* after a twenty-four-hour exposure to a one-day-old culture. (Plate Method.)" A 1 per cent. solution gave no growth.

Turpentine.—Marx[25] found that it required 1/500 turpentine acting for an hour to hinder the growth of anthrax. Forty minutes was required for *Staphylococcus pyogenes aureus.*

Glycerin.—Copeman,[26] from numerous experiments, fully covered by controls, on *Staphylococcus pyogenes aureus* and *albus, Streptococcus pyogenes, Bacillus anthracis, subtilis, coli communis, pyocyaneus, diphtheriæ,* and *tuberculosis* determines: "(1) No visible development of organisms employed takes place in presence of more than 30 per cent. glycerin in beef peptone broth; (2) all organisms, except coli and subtilis, are killed in less than one minute in the presence of 30 per cent. to 40 per cent. glycerin in the cold."

Potassium Permanganate.—According to Cabbot,[10] a 1/960 aqueous solution of permanganate potassium requires over six minutes to stop putrefaction in a putrefactive solution. Sternberg[9] found that 0.12 per cent. permanganate acting on gonococcus and micrococcus of abscess pus destroyed them.

BIBLIOGRAPHY OF ANTISEPTICS CONTAINING IODIN IN CHEMICAL COMBINATION.

Biniodid of Mercury.—On the *Staphylococcus aureus* and the *Streptococcus,* Tarnier and Vignal[6] have shown that a 1/1000 solution of biniodid of mercury is destructive in nine minutes; a 1/2000 solution in twenty-two minutes. On *Bacillus coli communis,* Burgess[8] states that "biniodid of mercury is by far the strongest and best antiseptic (of the ones he tried), and it is not affected by albumin." In his table he places 1/1000 solution effective in one minute; 1/5000 in five minutes; 1/20000 in ten minutes; 1/80000 in thirty minutes; 1/200000 in one hour.

Lithio-Mercuric Iodid.—Rosenberger,[27] working with lithio-mercuric iodid (34 per cent. mercury, 65 per cent. iodin, 1 per cent. lithium) and using thread method, found that on *Staphylococcus pyogenes aureus,* when threads were moist, 1/1000 solution for thirty seconds killed; 1/5000 for one minute did the same. When threads were dry, 1/1000 for one minute killed; likewise 1/5000 for three minutes. On *Streptococcus pyogenes* (dry threads) 1/1000 for thirty seconds killed; 1/5000 for thirty seconds killed; threads moist, 1/1000 for thirty seconds was effective; 1/5000 required two minutes. On anthrax bacillus 1/1000 solution was necessary for fifteen minutes when threads were dry, and for thirty minutes when moist threads were used. He concludes that this is a much more powerful germicide than the usual mercuric salts.

Iodoform.—The experimental results differ greatly from the clinical. A great deal of experimental work has been done on iodoform. Its action has been tested on various organisms by numerous investigators, and their findings seem to indicate that it possesses no bactericidal properties of any moment. The men who have so determined are Hevn and Rovsing,[28] Riedlin,[29] Baumgarten,[30] Kronacher,[31] Buchner,[32] Kunz,[33] Schnirer,[34] Lubbert,[35] and Tilanus.[36] On the other hand, the work

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11. Blyth: Proc. Royal Society, Edinburgh, 1884, vol. xii, p. 638.
12. Harrington: Boston Medical and Surgical Journal, 1903, vol. cxlviii, p. 551.
13. Salzwedel and Elsner: Berliner klin. Wochenschr., 1900, vol. xxxvii, pp. 496-500.
14. Gibler: Verhandl. d. X, International Medical Congress, 1890, Berlin, 1891, V, 15 Abth., pp. 124-125.
15. Shaw: Journal Hygiene, London, 1903, vol. iii, p. 162.
16. Pottevin: Annales de l'Institut Pasteur, 1894, p. 804.
17. Chamberland: Acad. de Science, Paris, 1883, vol. xcvi, p. 1088.
18. Stilling: Lancet, London, 1891, 1, p. 872.
19. Hebert: L'art méd., Paris, 1896, vol. lxxxiii, pp. 176-193.
20. Junor: Edinburgh Medical Journal, 1866-7, vol. xii, p. 684.
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22. Van Buren: American Medicine, 1903, vol. vi, p. 1021.
23. Pfeiffer: Berliner klinische Wochenschrift, 1903, vol. xl, p. 641.
24. Fortescue-Brickdale: Bristol Medico-Chirurgical Journal, 1903, vol. xxi, p. 343.
25. Marx: Centralbl, f. Bakteriol. Jena., 1902, vol. xxxiii, p. 75.
26. Copeman: Rep. Brit. Assn. Adv. Sc., London, 1896, p. 987.
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29. Riedlin: Arch. f. Hyg. München U. Leip., 1887, vol. vii, p. 310.
30. Baumgarten: Berliner klinische Wochenschrift, 1887, Bd., vol. xxiv, p. 354.
31. Kronacher: Münchener med. Wochenschrift, 1887, vol. xxxiv, p. 545.
32. Buchner: Munchener med. Wochenschrift, 1887, vol xxxiv, p. 465.
33. Kunz: Arbeiten a. d. Pathologische Institut Zu Konisberg, 1887.
34. Schnirer: Wiener medicin. Presse, 1887, Nos. 36-38.
35. Lubbert: Fortschritte d. medicin, Bd. V, 1887, pp. 330-345.
36. Tilanus: Munchener medinische Wochenschrift, vol. xxxiv, p. 309.

of Mikulicz,[37] who, on adding iodoform to putrefying liquids, saw putrefaction sometimes stopped and sometimes to continue; that of Maylard,[38] who states that it retards but does not stop the development of anthrax bacillus; and that of Stohegoleff,[39] who found that tubercle bacilli inoculated on 5 per cent. iodoform bouillon were dead in forty-eight hours, seems to indicate that under certain conditions (i. e., where free iodin is eliminated) *it* has a slight antiseptic value.

Clinically, when the iodoform comes in contact with tissues, more free iodin is eliminated, hence the results are much better than experiments would indicate. Its use in tubercular joint injections needs no comment. Vinke[40] reports favorably in two cases of anthrax dressed with iodoform. Sormani[41] found by wounding rabbits and guinea-pigs and injecting them with tetanus bacilli and then treating them with different antiseptics that iodoform was the most active of all, and if applied at once tetanus did not appear. Pryor[42] reports thirty-seven cases of puerperal sepsis with but four deaths treated by packing uterus and widely opened cul-de-sac with iodoform gauze, free iodin being liberated and shown to be present in the urine.

Iodin.—The antiseptic action of iodin was discovered by Davaine[43] in 1873. He found that a 1/12000 solution caused the virulence of anthrax to disappear in thirty minutes. Tarnier and Vignal,[6] in their work on *Staphylococcus pyogenes aureus* and *Streptococcus pyogenes*, found that a 1/1000 solution of potassium iodid required over an hour to kill, a 1/500 solution required fifteen minutes, and a 1/300 solution required eight minutes. White[44] states that he has made a number of tests and observed that "in strength of 1/1000 iodin solution in bouillon no growth of streptococcus occurs. *Staphylococcus aureus* will not grow in strength of 1/5000." Davaine[45] determines that a 1/170000 solution of iodin in contact with anthrax blood for fifty to sixty minutes renders it harmless to inject into guinea-pigs. Sternberg[9] states that a 0.2 per cent. solution destroys gonococcus acting for two hours. Claudius,[1] in his article describing his method of sterilizing catgut by immersing in a solution of one part iodin, one part potassium iodid, and water one hundred parts, for eight days and then transferring to 3 per cent. carbolic acid to rinse off excess of liquid iodin, remarks that from his experiments he has found that a 1 per cent solution kills *Staphylococcus aureus* in three minutes and anthrax in twenty hours. He states further that such a long contact is unnecessary (1/5000 solution kills anthrax spores in a short time).

Clinically, iodin solutions have been used with excellent results in treating anthrax. Sereins[46] reported two cases of anthrax cured by injecting a 1/100 solution around and into pustule. Brochin[47] has also reported two cases successfully treated by the same method. Human actinomycosis has been cured by the daily injection of 2 c.c. of a 10 per cent. iodin solution, as shown by Gaucher.[48]

In concluding the bibliography, it is only necessary to call attention to the great number of different substances employed as antiseptics to show that, as yet, the ideal germicide is a negative quantity.

TECHNIC OF EXPERIMENTAL RESEARCH.

Solution Employed.—A solution of iodin in sodium iodid and water was prepared after the following formula:

Iodin, gms.	2.5
Sodium iodid, gms.	5.5
Aqua (sterilized)	250 *cc.*

This gave a 1/100 solution. From this solution, by aqueous dilution, strengths of 1/200, 1/300, 1/500 and 1/1000 were made. In preparing the mother solution, accuracy was observed in weighing the iodin and sodium iodid. The same care was followed in making dilutions. The glass containers were sterilized.

Asepticity of Solutions.—The varying strengths of solutions were now tested to see whether or not they were, of themselves, sterile. For this purpose the plate method was employed. Three drops of solution were used to inoculate a melted agar tube from which a plate was made. From each strength solution three plates were made. After incubating six days every plate was free from colonies, hence sterile. To confirm results inoculations from the different strengths were made on 6 per cent. glycerin potato and incubated six days. The result was again negative in character.

METHOD OF CONDUCTING EXPERIMENTS.

In conducting the several series of experiments, an effort was made to employ a method which would offer the minimum possibility of error, and, at the same time, approach, as nearly as possible, to the exact relation of bacteria to the body in disease. In other words, the media employed were solid in every case, and the growths on them were allowed to become marked, both in extent and thickness, before beginning experiment. Thus, by the thickness of the growth, the penetrating power of the liquid could be ascertained.

The microörganisms on which the action of the iodin solutions was tried were various enough to permit of definite deductions being made from the results on the antimicrobic action of iodin. Thes[illegible] were: (1) *Bacillus prodigiosus;* (2) [illegible] and spores; (3) *Bacillus tuberculosis;* (4) *Staphylococcus pyogenes aureus;* (5) *Streptococcus pyogenes;* (6) *Blastomyces dermatidis;* (7) *Actinomyces bovis.* On these various growths in the test tubes, the iodin solutions were deposited by means of a sterilized pipette until the surface of the growth was completely covered. After varying periods of time, which are designated in the tables, small loops of growth, thus acted on, were transferred to tubes of sterile media and well inoculated, and then put in incubator and watched for growth. No effort was made to wash the inherent iodin solution from the loops because of the danger of washing away the bacteria. For each time of exposure, four tubes were used, each one being covered by a control tube. It is well to note that the bacterial growths transferred were macroscopic and not microscopic in size.

EXPLANATION OF TABLES.

A, B, C, D=Tubes to which bacteria, acted on by solution, were transferred.

A', B', C', D'=Control tubes inoculated with original healthy bacteria. The figures are based on the use of the unit 1 as the denominator of growth, being purely arbitrary and used for sake of comparison. It refers to the transverse extent of growths from smear and equals about ⅛ of an inch. 2=twice the denominator, 3=three times the denominator and so on.

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0=No growth.

?=Slight growth, but not equal to 1-32 inch.

Time=Figures designating days of growth, i. e., Figure 1 means growth on first day or 24 hours after inoculation. Figure 2 means growth on second day or forty-eight hours after inoculation, and so on.

The strength of solution and time of exposure are designated in each table.

ANTHRAX EXPERIMENTS.

The following tables (Group 1) show the results of the experiments with anthrax cultures:

D shows one point, while others are free from growth. On the third day effect still continues, A, C, and D showing points, B, free from growth. This continues the fourth day, A and C showing increase, equaling 1/16 of control growth, B is free from growth, D shows points of growth.

1/300 for *fifteen* minutes shows an inhibitory effect. D shows no growth throughout. On first day the rest show points. On second day there is a very slight increase. On third and fourth days there is a gradual increase, equaling about ¼ control at end.

1/300 for *thirty* minutes exhibits a marked inhibitory effect. On first day there is no growth. The second day points appear on A and D, B is free from growth, and C shows a slight one. On the third and fourth days A, B, and D show no increase in points. C shows a small fractional increase.

GROUP 1.—ACTION OF SOLUTIONS ON BACILLUS ANTHRACIS PLUS SPORES (TWO-DAY-OLD CULTURES*).

TABLE 1.—IODIN 1-1,000. EXPOSURE 15 MIN.

Day.	A	A′	B	B′	C	C′	D	D′
1	.2	1.5	1.5	1.5	1.5	1.5	1	1.5
2	.5	2.5	2.5	2.5	2	2.5	2.5	3
3	2	3.5	3.5	3.5	2.5	3	2.7	3.2
4	4	4	4	4	3	3.5	3.5	3.5

TABLE 2.—IODIN 1-1,000. EXPOSURE 30 MIN.

Day.	A	A′	B	B′	C	C′	D	D′
1	1.2	1.5	1.5	1.5	2.2	2	1	1.5
2	2	2.5	2	2	2.5	2.2	2	2.5
3	3	3.5	3	3	3.5	3	3	2.7
4	4	3.6	3.5	3.5	4.5	3.5	4	3

TABLE 3.—IODIN 1-1,000. EXPOSURE 60 MIN.

Day.	A	A′	B	B′	C	C′	D	D′
1	.2	2	.2	2.2	0	1.2	0	2
2	.2	2.5	.2	2.7	0	2.5	0	3
3	.2	3.5	.5	4	?	3.5	0	4
4	.3	4.5	1	5	.6	4.5	?	5

TABLE 4.—IODIN 1-500. EXPOSURE 15 MIN.

Day.	A	A′	B	B′	C	C′	D	D′
1	0	1.5	.3	1	0	1	?	1
2	.3	2.5	.3	2	0	1.5	.7	2
3	.7	3.5	1	3.5	?	2.5	.7	2.5
4	2	4.5	2	4.5	.5	3.5	2	3.5

TABLE 5.—IODIN 1-500. EXPOSURE 30 MIN.

Day.	A	A′	B	B′	C	C′	D	D′
1	0	1	0	1.5	0	1.5	0	1
2	?	2	0	2.5	0	2.7	?	2
3	.2	3	0	3.5	0	3.5	?	3
4	1.7	4	?	4.5	0	4	.5	4

TABLE 6.—IODIN 1-500. EXPOSURE 60 MIN.

Day.	A	A′	B	B′	C	C′	D	D′
1	0	1.5	0	1	0	.7	0	1
2	0	2.5	0	2	0	1.7	?	2
3	?	3.5	0	3	?	2.5	?	3
4	.2	4	0	3.5	.1	3	?	3.5

TABLE 7.*—IODIN 1-300. EXPOSURE 15 MIN.

Day.	A	A′	B	B′	C	C′	D	D′
1	?	1	?	2.5	?	1.5	0	2.5
2	.5	2.2	?	3	?	3	0	3.5
3	1.5	3	.5	4	.1	3.5	0	4
4	2	3.5	1	4.5	.2	4	0	4.5

TABLE 8.—IODIN 1-300. EXPOSURE 30 MIN.

Day.	A	A′	B	B′	C	C′	D	D′
1	0	1.5	0	1	0	1.5	0	1.5
2	?	2.5	0	2	?	2.5	?	2.5
3	?	3.5	?	3	.3	3.5	?	3
4	?	4.5	?	4	.7	4	?	3.5

TABLE 9.—IODIN 1-300. EXPOSURE 60 MIN.

Day.	A	A′	B	B′	C	C′	D	D′
1	0	1	0	2	0	1.5	0	2
2	0	2	0	2.5	?	2	0	2.2
3	.1	3	0	3.5	?	3	0	3
4	.3	3.5	0	4	?	3.5	0	4

TABLE 10.—IODIN 1-200. EXPOSURE 15 MIN.

Day.	A	A′	B	B′	C	C′	D	D′
1	0	1	0	1.5	0	1.2	0	1.5
2	0	2.5	.3	2.5	0	2.2	.7	2.5
3	0	3.5	1	3	0	2.7	1.3	3
4	0	5	1.7	4	?	3.5	2	3.5

TABLE 11.—IODIN 1-200. EXPOSURE 30 MIN.

Day.	A	A′	B	B′	C	C′	D	D′
1	0	1.5	0	1	0	1.5	0	1
2	.2	3	0	2.5	0	2.5	0	1.5
3	.5	4	0	3	0	3.5	?	3
4	.7	4.5	0	4	0	4	?	3.5

TABLE 12.—IODIN 1-200. EXPOSURE 60 MIN.

Day.	A	A′	B	B′	C	C′	D	D′
1	0	1	0	1.5	0	1	0	2.5
2	0	2	0	2.5	0	2.2	0	3.5
3	0	2.5	0	3	0	3	0	4
4	0	3	0	4	0	3.5	0	4.5

TABLE 13.—IODIN 1-100. EXPOSURE 15 MIN.

Day.	A	A′	B	B′	C	C′	D	D′
1	0	1.3	0	1	0	1	0	1.5
2	0	2.7	0	2.5	0	2.5	0	2.5
3	0	3.5	0	3	0	3	0	3.5
4	0	4	0	3.5	0	3.5	0	4

TABLE 14.—IODIN 1-100. EXPOSURE 10 MIN.

Day.	A	A′	B	B′	C	C′	D	D′
1	0	1.5	0	1	0	1.3	0	1
2	0	3	0	2.5	0	3	0	2.5
3	0	4	0	3.5	0	4	0	3
4	0	4.5	0	4	0	4.5	0	3.5

TABLE 15.—IODIN 1-100. EXPOSURE 9 MIN.

Day.	A	A′	B	B′	C	C′	D	D′
1	0	1.5	0	2	0	1.5	0	1
2	0	2.5	0	3	0	3	0	2
3	.1	3.5	0	4	0	3.5	0	3
4	.2	4.5	0	4.5	0	4	0	3.5

TABLE 16.—IODIN 1-100. EXPOSURE 8 MIN.

Day.	A	A′	B	B′	C	C′	D	D′
1	0	2	0	1.5	0	2	0	1.5
2	?	3	0	2.5	0	3.5	0	3
3	.7	4	?	3	0	4	.3	3.5
4	1	5	?	4	0	5	.5	4

TABLE 17.—IODIN 1-100. EXPOSURE 7 MIN.

Day.	A	A′	B	B′	C	C′	D	D′
1	0	2	0	2	0	1.5	0	1.5
2	?	3	1	3.5	?	2.5	?	2.5
3	.5	4	1.3	4	.1	3.5	.3	3
4	1	5	1.5	5	.3	4	.5	3.5

CONSIDERATION OF EXPERIMENTAL EVIDENCE ON ANTHRAX.

1/1000 for *fifteen* minutes is negative in action.

1/1000 for *thirty* minutes is negative in action.

1/000 for *sixty* minutes shows an inhibitory effect. On first day A and C give 1/10 of control growth, while B and D show no growth. On second day there is no further development. The third day A shows no further development, B, a slight one, C shows points, and D, no growth. On the fourth day A, B, and C show a further development equaling 1/10 control growth, while D shows points.

1/500 for *fifteen* minutes exhibits an inhibitory effect. The first day A and C give no growth, B one equaling 1/3 control growth, and D, a very slight one. On second day there is a slight increase, A. B, and D showing small fractional growths, C being free from growth. On third and fourth days the increase is progressively more rapid, equaling about ½ control growth on latter day.

1/500 for *thirty* minutes gives a marked inhibitory effect. First day there is no growth. On the second day A and D each show a point, while B and C are free from growth. On the third day B and C still remain without growth, A and D showing a very slight increase. The inhibition is still extremely marked on the fourth day, A and D exhibiting a fair increase in growth, equaling about ¼ control, C remaining free from growth and B showing one point.

1/500 for *sixty* minutes shows a very marked inhibitory effect. On the first day there is no growth. On the second day

1/300 for *sixty* minutes presents a very marked inhibitory effect. B and D show no growth throughout. On the second day a very slight growth appears on C which does not increase on third and fourth days. On third day a very small fractional growth appears on A which increases slightly on fourth day.

1/200 for *fifteen* minutes shows a marked inhibitory effect. A is without growth throughout. On first day there is no growth. On second day B and D show fractional growth which increases rapidly on third and fourth days equaling about ½ control growth. On fourth day a very slight growth appears on C.

1/200 for *thirty* minutes exhibits a very marked inhibitory effect. B and C are without growth throughout. D is without growth until third day when a point appears which does not increase on the fourth day. On the second day a small fractional growth appears on A which increases slowly on remaining days, equaling 1/6 control growth on fourth day.

1/200 for *sixty* minutes shows no growth throughout.

1/100 for *fifteen* minutes shows no growth throughout.

1/100 for *ten* minutes shows no growth throughout.

1/100 for *nine* minutes shows a very marked effect. B, C, and D are without growth throughout. On A there appears on third day a very small fractional growth which increases very slightly on fourth day.

1/100 for *eight* minutes shows a marked inhibitory effect. On first day there is no growth. On second, points appear on A, while B, C and D are free from growth. On third day A and D show fractional growths. B gives a point and C is free from growth. On fourth day A and D increase slowly, equaling about 1/7 control growth. C is without growth and B shows no increase in growth.

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* All two day-old cultures except in Table 7.

1/100 for *seven* minutes exhibits a marked inhibitory effect. The first day there is no growth. The second day shows points on A, C and D, while B equals 1/3 control growth. On third and fourth days there is a fractional growth which increases slightly, equaling 1/6 control growth.

SUMMARY OF EVIDENCE ON ANTHRAX.

Considering first the strength of solution and time of exposure to same necessary to produce the death of *Bacillus anthracis* plus spores, the evidence shows that a 1/200 solution for one hour or a 1/100 solution for ten minutes procures death. An exposure to a 1/100 solution for less than ten minutes gives a growth. The second consideration or the inhibitory effect, depending as it does on the two factors, i. e., time of exposure and strength of solution, first shows itself after an exposure of the organism to a 1/1000 solution for sixty minutes. The inhibitory effect is marked. The effect is also shown by an exposure of fifteen minutes to a 1/500 solution, but to a lesser degree. As the time of exposure is increased, the inhibitory effect becomes more and more marked. Likewise, as the strength of solution employed is increased, the inhibitory action becomes progressively more powerful. If, after the death point is reached, we decrease the time of exposure, we again come into the sphere of diminishing inhibition.

SUMMARY OF EVIDENCE ON PRODIGIOSUS.

The details of the experiments with prodigiosus cultures are as follows (Group 2):

1/500 for *thirty* minutes shows an inhibitive effect, the experimental growth equaling less than ½ control growth the first day. This effect becomes gradually less on second day. By fourth day control and experimental tubes are practically identical in amount of growth.

1/500 for *sixty* minutes shows an inhibitive effect on A, B, and C, the experimental growth equaling 1/7 control growth the first day. D is negative in action. From second day control and experimental growths are identical in extent.

1/300 for *fifteen* minutes shows an inhibitive effect, the experimental growth equaling 1/10 control growth the first day. This effect becomes gradually less until by the fourth day control and experimental tubes are identical.

1/300 for *thirty* minutes shows an inhibitive effect the first day, the experimental growth equaling 1/12 control growth. This effect becomes gradually less until by fourth day experimental and control growths are practically identical.

1/300 for *sixty* minutes shows a marked inhibitory effect first day, the experimental tubes showing a slight growth. This effect became gradually less until by fourth day experimental tubes show 2/3 of control growth. D, however, does not develop.

1/200 for *fifteen* minutes shows a marked inhibitory effect the first day, A, C, and D being negative, B showing slight growth. Marked inhibitory effect continues the second day when all experimental tubes show very slight growth. On third and fourth days the inhibitory effect still continues markedly, A and D showing no further development, while B and C show slight increase, equaling about 1/5 control growth on fourth day.

1/200 for *thirty* minutes shows a marked inhibitory effect. The first day there is no growth. The second day a slight growth appears on A and B, C and D negative. The third day inhibitive effect still continues, A, C, and D showing slight growth, B, marked increase. On the fourth day there is a gradual increase, the experimental tubes showing about 1/6 of growth on control tubes.

1/200 for *sixty* minutes shows a very marked inhibitory effect, A and D being negative in growth throughout. On second day C shows a very slight growth, B, negative. On third and fourth days B and C show gradually increasing growth equaling 1/3 control growth.

1/100 for *fifteen* minutes gives no growth.

GROUP 2.—ACTION OF SOLUTIONS ON BACILLUS PRODIGIOSUS (FOUR-DAY-OLD CULTURES).

TABLE 18.—IODIN 1-1,000. EXPOSURE 15 MIN.

Day.	A	A′	B	B′	C	C′	D	D′
1	2.5	2.5	2	2.5	3	3.5	3	2
2	3.5	3	3	3.5	3.5	4	4	4
3	5	3.5	4	4	4.5	4.5	4.5	5
4	6	4	4.5	5	5	5	5	6

TABLE 19.—IODIN 1-1000. EXPOSURE 30 MIN.

Day.	A	A′	B	B′	C	C′	D	D′
1	2	2	3	3	2	2.5	2	2.5
2	3	3.5	4	3.5	3	3	3.5	3
3	4.5	4	4.2	4.5	4	3.5	4	4.5
4	5.5	4.5	4.5	5.5	5	4	4.5	5

TABLE 20.—IODIN 1-1,000. EXPOSURE 60 MIN.

Day.	A	A′	B	B′	C	C′	D	D′
1	1	2	2	3	.5	2.5	1.5	1.5
2	1.5	3	3	4	1	3	2	2
3	2	4	3.5	5	1.5	4	3	2.5
4	2.5	5	4	5	2	5	4	3.5

TABLE 21.—IODIN 1-500. EXPOSURE 15 MIN.

Day.	A	A′	B	B′	C	C′	D	D′
1	1.5	1	2	2.5	2	2	2	2
2	2.5	1.5	3	3.5	3	3.5	2.5	3
3	3.5	2.5	3.5	4.5	3.5	4	3	4.5
4	4	3	4	5	4.5	4.5	3.5	5

TABLE 22.—IODIN 1-500. EXPOSURE 30 MIN.

Day.	A	A′	B	B′	C	C′	D	D′
1	.5	1.5	1	2	.2	2	.3	2.5
2	1	2	2	3	2	3	2	3.5
4	2.5	3.5	3.5	4	4	3.5	2.5	4
4	3.5	4.5	4.5	4.5	5	4	3.5	4.5

TABLE 23.—IODIN 1-500. EXPOSURE 60 MIN.

Day.	A	A′	B	B′	C	C′	D	D′
1	.1	1.5	.3	2	.2	2.5	2	2.5
2	2.5	2.5	3	2.5	2	3.5	3	3
3	3	3	4	3	3.5	4	4	3.5
4	4	3.5	4.5	3.2	4.5	4.5	5	4.5

TABLE 24.—IODIN 1-300. EXPOSURE 15 MIN.

Day.	A	A′	B	B′	C	C′	D	D′
1	.2	1.5	.2	2	.3	2	.5	2.5
2	2.5	2	1	3	1	2.5	1.5	3
3	3	3	2	3.5	3	3	3	4
4	4	4	3	4	4	4	4	5

TABLE 25.—IODIN 1-300. EXPOSURE 30 MIN.

Day.	A	A′	B	B′	C	C′	D	D′
1	?	2.5	.1	2	.5	1.5	?	2
2	1	3	2	2.5	3	2.5	1	2.5
3	1.5	4	3	3	3.5	3	2	3
4	2.5	5	4	4	4.5	3.5	4	3.5

TABLE 26.—IODIN 1-300. EXPOSURE 60 MIN.

Day.	A	A′	B	B′	C	C′	D	D′
1	?	1.5	?	2	?	2	?	2
2	.5	3	?	2.5	.5	3	1.5	2.5
3	2	4	?	3	2.5	4	2.5	3
4	2.5	5	?	3.5	3	5	3	4

TABLE 27.—IODIN 1-200. EXPOSURE 15 MIN.

Day.	A	A′	B	B′	C	C′	D	D′
1	0	2	?	2.5	0	2	0	2.5
2	?	2.5	?	3	?	3	?	3
3	?	3	.1	3.5	.5	4	?	3.5
4	?	4	.3	4	1.5	4.5	?	4

TABLE 28.—IODIN 1-200. EXPOSURE 30 MIN.

Day.	A	A′	B	B′	C	C′	D	D′
1	0	1	0	2	0	2.5	0	2
2	?	2	?	3	0	3	0	2.5
3	?	3.5	1	4	?	3.5	?	3.5
4	.5	4	1.5	4.5	?	4	1	4

TABLE 29.—IODIN 1-200. EXPOSURE 60 MIN.

Day.	A	A′	B	B′	C	C′	D	D′
1	0	2.5	0	1.5	0	2	0	2.5
2	0	3.5	0	2	?	3	0	3.5
3	0	4.5	.3	3	.5	4	0	4
4	0	5	1.5	4	1.5	4.5	0	4.5

TABLE 30.—IODIN 1-100. EXPOSURE 15 MIN.

Day.	A	A′	B	B′	C	C′	D	D′
1	0	3	0	2.5	0	2	0	2.7
2	0	4	0	3	0	3	0	3.5
3	0	4.5	0	3.5	0	4	0	4.5
4	0	5	0	4	0	4.5	0	5

TABLE 31.—IODIN 1-100. EXPOSURE 10 MIN.

Day.	A	A′	B	B′	C	C′	D	D′
1	0	3	0	3.5	0	3.5	0	3.5
2	0	3.5	0	4.5	0	4.5	0	4.5
3	0	4.5	0	5	0	5	0	5
4	0	5	0	6	0	6	0	5.5

TABLE 32.—IODIN 1-100. EXPOSURE 9 MIN.

Day.	A	A′	B	B′	C	C′	D	D′
1	0	2	0	1.5	0	3	0	2
2	0	2.5	0	2.5	0	4	0	3
3	?	4	.7	3.5	?	5	0	3.5
4	?	5	1.5	4	.2	6	0	4

TABLE 33.—IODIN 1-100. EXPOSURE 8 MIN.

Day.	A	A′	B	B′	C	C′	D	D′
1	0	3	0	2.5	0	2.5	0	3
2	.2	4	.5	3.5	0	3	?	3.5
3	1.5	4.5	2	4	0	3.5	.3	4
4	2.5	5	3	5	0	4	.5	4.5

TABLE 34.—IODIN 1-100. EXPOSURE 5 MIN.

Day.	A	A′	B	B′	C	C′	D	D′
1	.1	3	.1	2.5	.1	3	.1	2.5
2	2.5	4	2	4	1.5	3.5	2	3
3	3.5	5	3.5	5.5	3	4.5	3	4
4	4	5.5	4.5	6	4	5	3.5	5

CONSIDERATION OF EXPERIMENTAL EVIDENCE ON PRODIGIOSUS.

1/1000 for *fifteen* minutes is negative in action.

1/1000 for *thirty* minutes is negative in action.

1/1000 for *sixty* minutes shows an inhibitive effect, the experimental growth equaling less than ½ control growth the first day on A and C. This continues relatively the same on remaining days. B and D show no effect.

1/500 for *fifteen* minutes is negative in action.

1/100 for *ten* minutes gives no growth.

1/100 for *nine* minutes gives marked inhibitory effect. On first and second days there is no growth. On third day points appear on A and C, B shows a fractional growth, D is negative. On fourth day B and C show gradual increase, D, negative, and A showing points of growth.

1/100 for *eight* minutes shows an inhibitory effect. First day gives no growth. C is negative throughout. On second day growth appears which gradually increases up to the fourth day when it equals ¼ control growth.

1-100 for *five* minutes shows an inhibitory effect the first day, the experimental growth equaling 1/15 control growth. On the second, third and fourth days, this inhibitory effect becomes rapidly less. On fourth day the experimental growth is 4/5 control growth.

SUMMARY OF EVIDENCE ON PRODIGIOSUS.

In making a summary of the evidence, there are two factors to be considered: (1) The strength of solution and time of exposure to same necessary to produce the death of the microörganism; (2) the inhibitory action of solutions. Considering (1), therefore, we find that a solution less than 1 per cent., acting for an hour, does not destroy *Bacillus prodigiosus*. To cause the death of this organism it is necessary for a 1/100 solution of iodin to act for ten minutes. A shorter period of exposure, i. e., nine, eight and five minutes, gives a growth. On considering (2) it is readily seen that two items have to do with the inhibitory effect. These are, strength of solution and period of exposure. Thus, a solution acting for a certain period of time shows no inhibitory effect, but if the time of exposure is increased, such an effect appears. Conversely, as the strength of the solution is increased, the time of exposure necessary to produce an inhibitory effect becomes less. Bearing these two facts in mind, we find that in this series a slight inhibitory effect is first shown by a 1/1000 solution after an hour's exposure. A 1/500 solution begins to show this effect after thirty minutes' exposure; a 1/300 solution after fifteen minutes. Thus, progressively, as the time of exposure to each strength of solution is lengthened, and the strength of the solution itself is increased, the inhibitory action becomes more marked until the death point of the germ is reached. And, if we try to decrease the time of exposure necessary to produce death, we reach the inhibitory stage again.

TUBERCULOSIS EXPERIMENTS.

Tuberculosis experiments are detailed in Group 3.

GROUP 3.—ACTION OF SOLUTIONS ON BACILLUS TUBERCULOSIS (FOUR-DAY-OLD CULTURES).

TABLE 35.—IODIN 1-1,000. EXPOSURE 15 MIN.

Day.	A	A′	B	B′	C	C′	D	D′
1	4	5	4.5	4.5	4.5	5	4	5
2	4.5	5.2	5	4.7	5	5.5	4.5	5.5
3	5	5.5	6	5	6	6	5	6
1	5.5	6	6	5.5	6.5	6	5.5	6.5

TABLE 36.—IODIN 1-1,000. EXPOSURE 30 MIN.

Day.	A	A′	B	B′	C	C′	D	D′
1	4.5	4.5	4.5	4.5	3	4	3	4
2	4.7	5	4.7	5	4	4.5	4	5
3	5	5.2	5	5.5	5	5	5.5	5.5
4	5	5.5	5.5	6	5.5	5.5	6	6

TABLE 37.—IODIN 1-1,000. EXPOSURE 60 MIN.

Day.	A	A′	B	B′	C	C′	D	D′
1	4.5	5	5	4	5	5	3.5	4
2	5	5.5	5.2	4.5	5	5.2	4	5
3	6	5.7	5.5	5	5.5	5.5	4.2	5.2
4	6.5	6	5.5	5.5	6	6	4.5	5.5

TABLE 38.—IODIN 1-500. EXPOSURE 15 MIN.

Day.	A	A′	B	B′	C	C′	D	D′
1	1.5	4	3	3.5	2	4.5	2.5	3.5
2	2.5	4.5	4.5	5	3.5	5	3.5	4.5
3	3	4.6	5	5.5	5	5.5	4.5	5
4	3.5	5	5.5	6	6	6	5	5

TABLE 39.—IODIN 1-500. EXPOSURE 30 MIN.

Day.	A	A′	B	B′	C	C′	D	D′
1	1.5	3.5	2	4	?	4	0	3
2	3.5	4	4	4.5	2.5	5	1	4
3	4	4.5	4	5	3	5.5	2	4.5
4	5.5	5.5	4.5	5.5	4	6	4	5

TABLE 40.—IODIN 1-500. EXPOSURE 60 MIN.

Day.	A	A′	B	B′	C	C′	D	D′
1	0	3.5	3	3	?	3	0	3.5
2	4	4.5	5	4	2	3.5	2.5	4
3	4.5	5.5	5.5	5	2.2	5	2.5	5
4	5.5	6	6	6	2.5	5.5	2.5	5.5

TABLE 41.—IODIN 1-300. EXPOSURE 15 MIN.

Day.	A	A′	B	B′	C	C′	D	D′
1	0	4.5	0	4	0	4.5	0	4
2	1.5	5	4	5	3	5.5	2	5
3	3	5.5	4.5	5	3.5	5.7	3	5.2
4	4	6	5.5	5	4.5	6	5	5.5

TABLE 42.—IODIN 1-300. EXPOSURE 30 MIN.

Day.	A	A′	B	B′	C	C′	D	D′
1	0	3	0	3.5	0	4	0	3
2	0	3.5	1	4.5	2	4.5	2	3.5
3	0	4.5	2.5	5	2	5	3	4
4	0	5	4	5.5	2	6	4	5

TABLE 43.—IODIN 1-300. EXPOSURE 60 MIN.

Day.	A	A′	B	B′	C	C′	D	D′
1	0	4	0	3	0	3.5	0	3.5
2	1	4.5	0	3.5	1.5	4	3	4
3	1.2	5	.1	4.5	2	5	3.5	4.5
4	1.5	5.5	.3	5	2.5	5.5	4	5.5

TABLE 44.—IODIN 1-200.—EXPOSURE 15 MIN.

Day.	A	A′	B	B′	C	C′	D	D′
1	0	4	0	2.2	0	3.5	0	3
2	?	4.5	2	4	.1	4.5	?	4
3	?	5.5	2.5	4.5	.3	5.5	?	5
4	?	6	2.5	5	1.5	6	?	5.5

TABLE 45.—IODIN 1-200. EXPOSURE 30 MIN.

Day.	A	A′	B	B′	C	C′	D	D′
1	0	3.5	0	3	0	2.5	0	3
2	0	4	0	4	?	3	0	4
3	0	4.5	0	5	.2	4	0	5
4	0	5	?	5.5	.5	5	0	6

TABLE 46.—IODIN 1-200. EXPOSURE 60 MIN.

Day.	A	A′	B	B′	C	C′	D	D′
1	0	4	0	4	0	3.5	0	3.5
2	0	5	0	4.5	0	4.5	0	4
3	0	5.5	0	4.7	0	5	0	4.5
4	0	6	0	5	0	5.5	0	5

TABLE 47.—IODIN 1-100. EXPOSURE 15 MIN.

Day.	A	A′	B	B′	C	C′	D	D′
1	0	2	0	3	0	2	0	2
2	0	4	0	4.5	0	4	0	3
3	0	5	0	5.5	0	5	0	4
4	0	6	0	6	0	5.5	0	5

TABLE 48.—IODIN 1-100. EXPOSURE 10 MIN.

Day.	A	A′	B	B′	C	C′	D	D′
1	0	2	0	2	0	3	0	2.5
2	0	3	0	3.5	0	4	0	4
3	0	4	0	4.5	0	5	0	5
4	0	5	0	5.5	0	6	0	6

TABLE 49.—IODIN 1-100. EXPOSURE 7 MIN.*

Day.	A	A′	B	B′	C	C′	D	D′
1	0	3	0	2.5	0	2	0	3
2	0	4.5	0	3.5	0	4	0	4
3	0	5	0	4.5	0	5	0	5.2
4	0	6	0	5	0	5.5	0	6

TABLE 50.—IODIN 1-100. EXPOSURE 6 MIN.

Day.	A	A′	B	B′	C	C′	D	D′
1	0	3	0	3	0	3	0	2.5
2	0	4	0	4	0	3.5	?	3
3	?	5	0	5	0	4.5	.2	3.5
4	?	6	0	6	0	5.5	.5	5

TABLE 51.—IODIN 1-100. EXPOSURE 5 MIN.

Day.	A	A′	B	B′	C	C′	D	D′
1	0	2	0	2	0	1.5	0	2
2	?	3.5	?	4	?	3	0	4
3	?	4	.5	5	?	4	0	4.5
4	?	5	.7	6	?	5	0	5

* This was watched for a number of days, but no growth appeared on experimental tubes.

CONSIDERATION OF EXPERIMENTAL EVIDENCE ON TUBERCULOSIS.

1/1000 for *fifteen* minutes shows no effect.

1/1000 for *thirty* minutes shows no effect.

1/1000 for *sixty* minutes shows no effect.

1/500 for *fifteen* minutes shows a slight inhibitory effect the first day. This effect becomes less on the second day and disappears on the third day. Experimental tubes and controls are equal on third and fourth days.

1/500 for *thirty* minutes shows an inhibitory effect the first day, A and B showing ½ control growth, while C gives a point and D is free from growth. This inhibitory effect extends slightly into the second day. On third and fourth days A and B equal control growth, C and D slightly less.

1/500 for *sixty* minutes presents an irregular inhibitory effect. The first day A and D are free from growth, C shows a point, and B equals control growth. The second day the inhibitory effect becomes rapidly less, A and C equaling control growths and remaining equal to the same on the third and fourth days while C and D show a rapid increase in growth which, on third and fourth days, does not increase, equaling less than ½ control growth.

1/300 for *fifteen* minutes shows a marked inhibitory effect the first day, there being no growth. On the second day the growth equals ½ control growth. On the third day the inhibitory effect is still slighter and on the fourth day experimental growth is but slightly less than control.

1/300 for *thirty* minutes shows a marked inhibitory effect. The first day there is no growth. A remains without growth throughout. On the second day growth appears which equals less than ½ control growth. On third and fourth days there is a rapid increase in growth. The experimental tubes equal 2/3 control growth on the fourth day.

1/300 for *sixty* minutes presents a marked inhibitory effect. There is no growth the first day. On the second day A, C, and D show a growth equaling 1/3 control growth, while B is free from growth. On third and fourth days this growth increases rather slowly, equaling on the fourth day about 1/3 control growth.

1-200 for *fifteen* minutes shows a marked inhibitory effect. First day there is no growth. On the second day points of growth appear on A and D which on third and fourth days increase scarcely any. On the second day growth appears on B and C which equals about ¼ control growth. This increases slightly on the third and fourth days, equaling about 1/3 control growth.

1/200 for *thirty* minutes shows a very marked inhibitory effect. First day there is no growth. A and D remain free from growth throughout. B is free from growth until fourth day when several points appear. On the second day points appear on C which on the third and fourth days give a slightly increasing fractional growth (1/10 control).

1/200 for *sixty* minutes shows no growth throughout.

1/100 for *fifteen* minutes shows no growth.

1/100 for *ten* minutes shows no growth.

1/100 for *seven* minutes shows no growth.

1/100 for *six* minutes shows a marked inhibitory effect. First day shows no growth. B and C are free from growths throughout. On the second day D shows points and A is sterile. On the third day A gives a point, D a slight fractional growth. On the fourth day A shows two points, D, a slight increase, equaling 1/10 control growth.

1/100 for *five* minutes exhibits a very marked inhibitory effect. On the first day tubes are free from growth. D is free from growth throughout. On the second day A, B and C show points. On the third and fourth days A and C show no increase in growth, while B shows a small fractional one, equaling ⅛ control growth.

SUMMARY OF EVIDENCE ON TUBERCULOSIS.

The evidence shows that to produce the death of the *Bacillus tuberculosis* an exposure to a 1/200 iodin solution for one hour or to a 1/100 solution for seven minutes is necessary. An exposure of less than seven minutes results in a growth. When we come to the consideration of the inhibitory effect we find that a 1/1000 solution for one hour is without effect. Inhibition begins to be shown slightly by a 1/500 solution for fifteen minutes. From this point on, as the period of exposure is increased and as the solution employed becomes of greater strength, the inhibitory effect becomes progressively more and more marked until the death point is reached. Then, if we try to lessen the time of exposure to the necessary strength, we come into the sphere of inhibition which decreases as the exposure decreases.

(To be continued.)

UNILATERAL TRANSITORY PARALYSIS OF THE ABDUCENS.

WITH REPORT OF CASES.*

MEYER WIENER, M.D.

ST. LOUIS.

Paralysis of the sixth nerve occurs with comparative frequency in ophthalmic practice. It may be unilateral or bilateral alone or associated with lesions of other ocular nerves. The causes may be many, including syphilis, congenital or other traumatism, diabetes, central lesions, etc. One etiologic factor, however, has heretofore been questionable and has created considerable controversy; that is, hysteria. Some doubt the existence of a hysterical abducens paralysis, and Möbius[1] denies the existence of hysterical paralysis of the eye muscles at all, and ascribes such paralyses to traumatism; and considers, he states, the "apparent" abducens paralysis to be a spasm of the internal recti. On this point, however, I think we have indisputable proof, as evidenced by cases reported by such authorities as Leber, Parinaud, Nonne and Beselin, Guttman, Duchesne, Roder and Wilbrand.

Within the past twelve months there have come under my observation four cases of unilateral abducens paralysis, which were transitory in character and not associated with paralysis of other ocular nerves or with any tangible disease of any sort.

CASE 1.—Miss Nora Y., aged 9 years, school girl, was brought to the Jewish Hospital Dispensary, June 14, 1904, by her mother, who stated that, three days before, the child had complained of seeing double and the mother then noticed that the child's eyes were crossed. The child had had severe headaches all winter, but the mother was positive that there was no crossing previous to three days before she came.

Examination showed deviation of left eye inward and inability of patient to carry eye outward past median line. The amount of inward deviation of left eye was to the extent of one-third, the cornea being covered by inner canthus. All other ocular movements normal. Pupils normal and react to light and accommodation. V. O. D. = 14/15. V. O. S. = 14/20. Fundus normal. Refraction normal. Fields normal. General appearance good. Color healthy. Mother stated that the child had "brain fever" when 1 year old. Otherwise has been in good health. Mother has four children, all healthy; no miscarriages. No history of syphilis.

Thinking, perhaps, there might possibly be some central trouble or some hysterical signs I might have overlooked, I referred her to the neurolgic clinic. Dr. Schwab could elicit no sign or symptom of hysteria or otherwise. In the face of these facts we still considered the probability of the condition being functional and suggested to the little one that it would get better with medicine. Three-grain doses of sodium bromid were given three times daily. On June 21, patient returned and was able to carry eye outward about 30 degrees. June 30, 1904, patient returned cured.

CASE 2.—Clara A., aged 12, school girl, came to Washington University Eye Dispensary, Sept. 6, 1904. On previous day she noticed blurred vision and diplopia. Parents noticed at same time that eyes crossed. The child was apparently healthy and strong; has had usual diseases of childhood. No history of syphilis or of traumatism. Examination shows deviation of right eye inward and inability to carry right eye outward past median line, in fixing with left eye covered or with both eyes open. All other ocular movements normal. Pupils react to light and accommodation. Had worn glasses for headaches for past three years. V. O. D. 0.5 D. cyl. ax. 90° = 14/15. V. O. S. 0.62 D. cyl. ax. 90° = 14/12. Fundus normal. Refraction +2. No signs of hysteria or other disease.

Patient was treated with three grain doses of sodium bromid and suggestion, and asked to return in a few days. Did not return until Sept. 21, but with complete resolution.

CASE 3.—Maggie S., aged 28, came to office Oct. 15, 1904, with paralysis of left external rectus, which came on suddenly two days before. She stated that about a week before she received a sudden shock by witnessing a street car accident, that she grew suddenly dizzy at the time and nauseated, but felt well after that until two days before coming to office. She is now extremely nervous, but no definite hysterical signs could be elicited. Pupils react to light and accommodation. V. O. D. = 14/300 — 4.5 D. S. ⌢ — 0.5. D. cyl. ax. 120° = 14/25. V. O. S. = 14/25 + 0.5 D. cyl. ax. 90° = 14/15.

Ten grain doses of sodium bromid were given three times daily and October 25 there was complete recovery.

CASE 4.—Minnie V. D., aged 16, came to office May 9, 1905. Two weeks before had tingling of whole left side of head; this lasted one week. When tingling subsided, she noticed that she saw double. She has been troubled with headaches since going to school. She has had usual diseases of childhood; no history of syphilis. Has always been nervous. Present condition: Inability to carry right eye outward past median line, either with left eye closed or with both eyes open. In state of rest, right eye deviates inward. V. O. D. = 14/25. V. O. S. = 14/20. Fundus normal, fields normal. Fauces anesthetic, cornea slightly so. Patient giggles at slightest provocation. Ordered compound syrup of hypophosphites. May 16, 1905, there was no improvement in patient's condition. Ordered sodium bromid 5 grain doses three times daily. Patient did not return until June 17, 1905, when complete resolution had taken place.

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* Read in the Section on Ophthalmology of the American Medical Association, at the Fifty-sixth Annual Session, July, 1905.

[1] Graefe-Saemisch: Handbuch der Gesammten Augenheilkunde, vol. viii, Chap. xi, p. 11.

Borel[2] reports a case of "true hysterical paralysis of external rectus muscle." The motor disturbances predominated in his case, sometimes in the right and sometimes in the left. In the field of fixation the lateral fixation was 43 degrees inward and 41 degrees outward in the right, and 37 degrees inward and 41 degrees outward in the left eye, which does not indicate a weakness of right rectus muscle, but a failure of all associated movements to right. Again, he states, "at a distance in the median plane homonymous diplopia was observed; nearer, single vision was established, still nearer cross diplopia appeared." These are symptoms of contracture of convergence.

Parinaud[3] says that Samelsohn stated to him that he had seen a case of hysterical paralysis of the sixth pair. Leber[4] and Schwab[5] report cases of bilateral abducens paralysis following typhoid convalescence in the former, there being albuminuria.

Guttman, Cohn, Landenberg, Bernheimer and others report cases of bilateral abducens paralysis in diabetes, which recovered on improvement of general condition. Wilbrand[6] observed abducens paralysis in two nervous women without a deviation inward. In directing the eye straight ahead there was no diplopia. When, however, the eye was directed outward, the eye of the paralyzed side remained fixed while that of the normal side followed the movement of the fingers. In these cases were also present photophobia, blepharospasm and a number of other nervous symptoms.

Röder[7] published, in 1891, a case in which a young 17-year-old girl had a mixed anesthesia, abducens paralysis and mydriasis left. Pupil did not respond to light or accommodation. There was paralysis of accommodation, monocular diplopia and contracted visual field. Patient got well by suggestion.

Freund and Rie[8] report that there occurred, in two cases of cerebral hemiplegia in children, following a new attack of illness (associated with fever and convulsions), a paralysis of the abducens which disappeared in a short while. Schweigger[9] reports a case of contraction of the interni with limitation of movements of the externi. Nonne and Beselin[10] report a 24-year-old patient with "grand hysterie" with hypalgesia, hypasthesia and diminished sense of taste, smell and hearing on left side, with a spastic ptosis and paralysis of left abducens. Patient unable to carry left eye outward past median line. After several attempts, however, by fixing head and manipulating a mirror which patient was looking into, left eye was finally carried outward; but immediately lapsed into former condition.

I am sorry that I did not know of this mirror test at the time I examined my cases, but I do not believe, however, that it would have affected the result.

In conclusion, I maintain that these cases prove that a functional (or hysterical, if you will) paralysis of the abducens does occur; that it may be unilateral or bilateral, and that there need necessarily be no other hysterical signs or symptoms evident, all of which is of the greatest importance from a diagnostic, as well as a prognostic, standpoint.

DISCUSSION.

DR. H. STILLSON, Seattle, Wash., said that he had observed that the ability to rotate the eye outward depends largely on one's individual facility, and that the education of one's external recti is much more difficult than the education of one's internal recti. The examination of eyes with Stevens' instrument often surprises one at the difference in the rotation at different times; a rotation outward at one sitting being very different from that of a subsequent reading. Dr. Stillson thinks, therefore, that some cases mentioned as paresis of the external recti may be put down in the class of hysteria or in the class of cases modified by one's lack of facility, and that in those patients who have recovered rapidly the recovery may be due to the education of the external recti.

PROGRESSIVE AXIAL MYOPIA.

ITS PREVENTION AND CURE BY APPROPRIATE TREATMENT OF THE INTERNAL AND EXTERNAL RECTI MUSCLES; WITH REPORT OF CASES.*

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It must be admitted that, while the science of ophthalmology, as a whole, has shown a remarkable advance in recent years, our knowledge of the etiology, and particularly the treatment, of progressive myopia is little, if any, greater than it was twenty or thirty years ago.

Various eminent authorities, during recent years, have described what they considered the principal factor in its causation, while others have studied exhaustively the gross and microscopic tissue changes that may be present in the myopic eye; and still others have suggested many ways of bettering the hygienic surroundings and increasing the comfort of the myope; yet no one, to my knowledge, has ever suggested a definite form of treatment for the prevention or cure of this unfortunate condition.

It has been stated by Cohn that 10 per cent. of the blindness of inmates of public institutions in Germany is directly due to an advancing myopia; and Tschering, in Copenhagen, estimates the proportion of myopes in the community at 8 per cent.

In this country, where we possess every facility, and the skill and inclination to do the best refraction work, and in spite of the excellent school hygiene that is nearly everywhere maintained, it is well known to all ophthalmologists that myopia is steadily increasing.

This is more noticeable, of course, in the centers of learning and industry, where a large and increasing necessity for close work is imposing its penalty on all but the more perfect eyes.

It is expedient, then, that we should direct our efforts to the perfection of some means of checking the progress of this dread destroyer of sight and happiness.

To this end I wish to submit a plan of treatment, evolved, in greater part, from my own experience, and employed with a very gratifying degree of success for the past five or six years.

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[2] Affections Hystériques des muscles de l'œil. Arch. d'Ophthal. vol. vi, 1886.

[3] Ocular Manifestations in Hysteria. Norris and Oliver System of Diseases of the Eye.

[4] Schmidt-Rimpler · Nothnagel's Handb. d. Spec. Path. u. Ther.

[5] Interstate Medical Journal, April, 1902.

[6] Wilbrandt & Sanger: Sehstörungen.

[7] F. Weiss: Montssch. f. Pschiat. und Neur., 1899, vol. xi, No. 6, p. 420.

[8] Klinische Studie über die Halbseitige Cerebrale Lähmungen der Kinder, 1891.

[9] Klinische Untersuchungen über das Schielen, 1881.

[10] Kontractur und Lähmungszustande bei Hystérie. Festschr des Artzl ver in Hamburg.

* Read in the Section on Ophthalmology of the American Medical Association, at the Fifty-sixth Annual Session, July, 1905.

Briefly, this treatment consists, in addition to the usual routine of correcting refractive errors and vertical imbalance by glasses, and strict attention to the general health, of properly regulated exercise of the internal recti muscles with prisms, and the careful administration of galvanism, locally.

In exceptional cases the above is found inefficient and must be supplemented by operative measures, consisting of tenotomy of the external rectus of one or both eyes.

I am well aware that none of these procedures are new, yet, after a thorough search through a very extensive literature, no mention was found either in special articles or text-books of any one of them having been advised or used in the same manner and for the same purpose as will presently be described.

Both muscle exercise and operative procedures are recommended in extreme cases for relief of the asthenopic symptoms that accompany progressive myopia, and, as a matter of fact, it was while using them for this purpose that I first became aware of their efficiency in preventing the onset, or checking entirely the progress of the disease itself.

As an illustration, the following is quoted from the recently published sixth edition of "Diseases of the Eye," by Edward Nettleship, and it would seem to cover what has been done along these lines:

> Preponderance of the external over the internal recti, insufficiency of convergence, if not cured by partially correcting glasses, may be treated by the division of the external rectus of one or both eyes, but not until after an effort has been made to strengthen convergence by means of properly regulated prismatic exercise.
>
> For this purpose the patient fixes his gaze on a point of light twenty feet away, while the strongest prisms, base out, with which the patient can fuse the light, are placed in a spectacle frame.
>
> After regarding the light a few moments, the eyes being still fixed on it, the prisms are raised and the convergent effort relaxed; after a few moments the prisms are again lowered before the eyes, and this alternate lowering and raising of the prisms, and the consequent stimulation and relaxation of convergence persisted in for five minutes.
>
> These exercises should be repeated three times daily, and the strength of the prisms increased as the patient is found to be able to fuse higher ones. By this procedure the power of adduction is frequently carried to 100 degrees within a few [illegible], with a great relief of the asthenopia.

[illegible] will be noticed in the above quotation—and the same is true of other writers—that, while these or simi[illegible] measures are advised for relief of painful symptoms accompanying myopia, nothing is said regarding their [illegible]ect on the progress of the disease.

It was my custom in the first years of practice to treat all cases of exophoria, whether accompanying myopia or not, by giving the patient prisms of different strengths to use at home, with printed instructions for their guidance, and seeing them at the office only at infrequent intervals, or at the completion of the treatment. By this method gratifying results were obtained in a certain proportion of cases, but there was a considerable number who from one cause or another did not carry the treatment to a successful termination. Either they did not use the prisms understandingly or, not seeing an early and decided improvement in their symptoms, discontinued their use too quickly. Another, and more serious, defect in this method was finally discovered to be that whatever good results were obtained were not in the majority of cases permanent.

One or two of the cases that will be reported at length illustrate this not only as regards the exophoria itself, but in connection with the development of myopia.

DESCRIPTION OF THE TREATMENT.

Realizing that the poor results in some cases were probably due to a lack of thoroughness in applying the treatment, it was decided to keep the patient constantly under observation during its course, and, having in mind the tonic and stimulative properties claimed for the interrupted galvanic current, this was used in connection with the exercises. Better results were soon apparent, and it was found that by continuing the treatment sufficiently long the exophoria was permanently cured in practically all cases, and that without resort to operation. A complete description of the treatment as now used follows:

The patient is given a single square prism, usually 10 degrees, or weaker if necessary, with which to begin the exercises at home. A small candle or gas flame that does not illuminate the surroundings too much is placed on a level with the eyes, and not less than twenty feet away. It is desirable to have the room darkened by lowering the shades, and that it should not contain too many articles that might cause reflections.

It is supposed that distance glasses have been ordered when needed, and with these in place the patient is instructed to produce a crossed diplopia by holding the prism over either eye, base out, and then to attempt to again fuse or bring the two lights into one.

If a prism of the proper strength is given and it is rotated until the two lights are at the same level, little difficulty will be experienced in getting them together.

Since the eye that is covered by the prism is the one that converges in overcoming this artificial diplopia, it is necessary to divide the exercise between the two eyes, say two minutes with the right eye, then two minutes with the left, removing the prism as often as the lights merge into one. This is to be done twice, and, if convenient, three times each day, but not for a longer time than two or three minutes with either eye, and if very noticeable pain is caused the time should be shortened. Each strength of prism is used at least two or three days, or until the lights can be fused very quickly and without apparent effort. When this is accomplished with the 10 degrees, a 3 degrees is added and the two used in the same manner; then the 3 degree is replaced by a 5 degree, and, finally, all three are used, being held together conveniently by a rubber band. When the 18 degrees can be overcome, the 5 degree and 3 degree are replaced by another 10 degree, and the same process may be repeated until a sufficient power of convergence has been obtained, the minimum in the writer's practice being 48 degrees.

The average length of time necessary to reach this point is between three and four months; and during this period the patient should make three or at the least two visits at the office each week to receive local treatments.

The battery or wall plate should be equipped with a milliampere meter, rheostat and automatic interrupter. A double-eye electrode with long handle is attached to the positive pole and the well-moistened sponges applied over the closed upper lids, being held in this position by the patient, while the opposite pole, carrying a moistened sponge, is placed at the nape of the neck by the operator.

The interrupter is so adjusted as to produce about thirty or forty interruptions per minute, and the handle of the rheostat is turned gradually until a faint flash is seen by the patient with each break in the current.

The duration of treatment is five minutes, and it should never cause any discomfort or pain; the slight blurring of vision that may follow its application passes away in a very few moments.

Aside from the intrinsic value of the electricity, its use enables the surgeon to be sure that his instructions regarding the use of the prisms are being fulfilled, and this, in my experience, has been of vital importance.

SUMMARY OF CASES.

Before reporting any cases at length, it may be of interest to present a brief summary of fifty cases taken from the writer's private records, as illustrating with what degree of uniformity certain conditions and symptoms are present. In selecting these cases, none were taken that have been seen for the first time within the past two years, and only those in which the myopia was undoubtedly progressive, this latter being determined by a history of recently failing vision either with or without glasses, and a consideration of the other symptoms. The figures given below are approximate:

Seventy per cent. were females; 30 per cent. males.
Average age at which glasses were first worn, 17 years.
Youngest age at which glasses were first worn, 8 years.
Oldest age at which glasses were first worn, 34 years.
Cases in which no glasses had been worn, 20 per cent.
Cases in which previous glasses were fitted by oculist, 30 per cent.
Cases in which previous glasses were fitted by optician, 50 per cent.
Amount of myopia present, 0.25 to 14.00.
Number of cases requiring [illegible]ations, 3.
Astigmatism present in 90 [illegible]ent. of all eyes, 0.25 to 4.00.
Typical fundus changes in 30 per cent. of all eyes.
Cover test positive in all cases.
Average abduction, 9 degrees.
Average adduction, 10½ degrees.
Highest abduction, 16 degrees, with adduction of 18 degrees.
Highest adduction, 18 degrees (two cases), with abduction 11 degrees and 16 degrees.
Lowest abduction, 4 degrees, with adduction, 8 degrees.
Lowest adduction, 7 degrees, with abduction, 7 degrees.

The following is a record of only the more important symptoms:

Soreness or pain in the eyes themselves, 28 cases.
Some form of headache in all cases.
Panorama headaches and car sickness, 30 cases.
Photophobia in 30 cases.
Nervousness, 20 cases.
Temporary diplopia, 5 cases.

Of course, it is not claimed that every patient not already myopic, who may exhibit any or all of the above conditions, will develop myopia or even show a decrease of hyperopia, if present; nor that every case of myopia (which certainly during its development was progressive) is due to an abnormal converging power, since the general conditions of health and certain occupations may be the determining causes. This is evidenced by a large number of cases that have become stationary, without local treatment of any kind, but simply through change of occupation or improvement in health. On the other hand, the above findings would seem to justify us in promulgating the rule that any case of myopia accompanied by asthenopic symptoms or headache, with deficient converging power and a true exophoria, as shown by the cover test, may be safely classed as progressive, and should receive appropriate treatment, directed not only to a relief of symptoms, but to the abatement of the disease itself.

It must be understood that a number of etiologic factors other than those mentioned may be present in every case, such, for instance, as heredity (the term being used here in the sense that certain inherited anatomic peculiarities may predispose to the acquirement of a myopia); astigmatism, on the importance of which in this disease Ball, in his recently published and very excellent textbook, lays so much stress; and congestion, induced by stooping or other unfavorable positions assumed by the patient, either through habit or from necessity in certain occupations.

We should then, as heretofore, advise our myopic patients as to the proper use of their eyes; also as regards the amount of work and its illumination; and, further, it is of the utmost importance that their general condition of health should receive very careful consideration if we would get the best results from our local treatment.

In a majority of cases reported in this paper, it has been possible to make recent observations, and in none of these has there been an increase of the myopia sufficient to warrant a change of lenses.

The following cases are typical, and are reported at length merely to emphasize certain points in the treatment, and to direct your attention to some of the difficulties of its application:

CASE 1.—Ella D., aged 9 years, Aug. 25, 1898. Never has worn glasses. Could not see writing on blackboard from rear seat. General health good. Has supraorbital and temporal headaches after reading a few minutes. Car sickness marked.

V. L.=20/50. V. R.=20/50. Abduction, 7°; adduction, 12°.

Cover test shows divergence. Refraction with homatropin.

L.+1.25, ax. 90=20/30+R. 1.50, ax. 90=20/30+.

These glasses were ordered, with instructions for patient to return in two weeks.

Nov. 13, 1898: Patient can see much better with glasses, but still has same symptoms, although headaches are not quite as frequent or severe.

Distant vision, 20/30+ both eyes.

Prism exercise was advised and a full set of prisms was given to use at home. Prisms were returned at end of six weeks. She could overcome the diplopia produced by 48°, and headaches had ceased.

Nov. 25, 1899: Patient came in complaining of headaches and failing distant vision.

Vision with glasses: L.=20/50— R.=20/50—.

Refraction with homatropin: L.—1+1.25 ax. 90=20/30+ R.—1+1.50 ax. 90=20/30+.

Abduction, 7°; adduction, 18°; cover test +.

Prism exercise again advised, but not used.

July 28, 1903: Again complains of poor distant vision.

Abduction, 7°; adduction, 16°.

Refraction with homatropin: L.=—1.75—1.25 ax. 180°=20/30+R.—2—1.50 ax. 180=20/30.

Prism exercise and galvanism for ten weeks, with relief of all symptoms.

Sept. 10, 1904: Came in to have broken glass replaced. No symptoms. Abduction, 7°; adduction, 35°. Vision, 20/30+, both eyes.

CASE 2.—Anton R., 12 years old. First seen Oct. 11, 1899. Has noticed failing distant vision for last year and a half. Eyes ache after studying and are frequently inflamed. General health good.

V. L.=20/100. V. R.=20/100+. Abduction, 4°; adduction, 8°. Cover test +. Refraction with atropin: R.—1.25—0.50 ax. 90=20/15— L.—2.25=20/20+.

Muscle exercise was advised, but not taken at this time.

Jan. 27. 1902: Vision with glasses: 20/200, each eye.

Refraction with homatropin: L.—3.50—0.50 ax. 90=20/15. R.—4.50=20/20+.

Myopic crescent marked; no other gross changes. Muscle exercise and galvanism, three months.

Oct. 19, 1904: Last seen. Vision with glasses better than 20/20 in each eye. No symptoms.

CASE 3.—Miss O. R., 15 years old. First seen Nov. 13, 1900. Worn glasses since 8 years of age; fitted by optician, and changed by him twice for stronger ones. Has nearly constant pain in eyes, and frequent supraorbital headaches. Photophobia. Floating spots before both eyes. Mother always nearsighted. Present glasses —10.00 both eyes. V. 4/200, each eye. With glasses, V.=20/200, each eye. Refraction with homatropin: L.—14—1.50 ax. 120=20/40. R.—14—1.50 ax. 90=20/50+; abduction, 10°; adduction, 16°. Cover test +.

Muscle exercise and galvanism were given fourteen weeks, with relief of all asthenopic symptoms.

Dec. 10, 1901: In answer to a request to come in, she wrote as follows: "My eyes are getting along nicely, and I have had no trouble with them this winter."

Case 4.—Mrs. B., 44 years old. Seen Nov. 3, 1899. Worn glasses ten years. Has had them changed frequently by opticians. Has quite severe pain in eyes after a few minutes of sewing, reading or any near work. Nearly constant supraorbital and temporal headaches. Car sickness. Photophobia. She has not been without a headache for any length of time in twenty-five years. Has had three pelvic operations (the exact nature of which was not learned) for the relief of nervousness and headache, but without any benefit, so far as she could see. Is extremely nervous and suffers much with insomnia. Appetite good. Appears perfectly healthy, and weighs nearly 200 pounds.

Present glasses, L.—3.50. R.—4.50.

Vision with glasses, 20/50+, each eye. Abduction, 10°; adduction, 18°. Cover test positive.

Refraction with homatropin: L.—3.00—2.00 ax. 90=20/30+. E.—3.50—2.25 ax. 20=20/20—1 (letter; +1) added to above for reading.

Myopic crescent and thinning of pigment layer, but no other visible fundus changes. Glasses were ordered, No. 2, shade smoke. Prism exercise and galvanism were given at the office three weeks, when patient was compelled to leave for her home in Wisconsin. As she could not come in again for several months, prisms were given for home use. In March, 1900, was using 50° prism, and felt more comfortable in every way, but still complained of the headaches.

A tenotomy of the right external rectus was done in May, 1900.

In June the same operation was performed on L. external rectus.

This relieved entirely the headaches, and up to August, 1903, there was no recurrence, and no necessity for a change of distant glasses.

Case 5.—Hattie K., 12 years old. First seen Jan. 27, 1900. Wearing glasses fitted by optician one year ago, —1.12 both eyes. Has frequent supraorbital headaches, most severe over right eye. Photophobia, conjunctival hyperemia. Has been kept out of school on account of nervousness. Vision L.=20/60. V. R.=20/70+. Abduction, 5°; adduction, 10°. Cover test +.

Refraction with atropin: L.+3.25 ax. 95=20/30+. R. +2.50 ax. 85=20/20—.

Muscle exercise advised and prisms used at home, with relief of headaches for the time being and great lessening of nervousness.

Jan. 18, 1902: Came in complaining of failing distant vision and same symptoms as before. Refraction with homatropin: L.—1.25+3.25 ax. 95=20/30+. R.—2+2.75 ax. 85=20/20—.

Muscle exercise again given, but with the addition of galvanism. All eye symptoms disappeared and school was resumed March 28, 1905. Has had no recurrence of headaches or other symptoms, and only slight nervousness. Vision with glasses, same as three years ago..

Case 6.—Miss M., aged 23 years, seamstress; Oct. 29, 1900, V. L.=6/200. V. R.=10/200.

Is very nervous, otherwise general health good. First glasses fitted by optician one year ago, but not worn recently. Within last few months has been getting very "near-sighted."

After sewing for a short time has "drawing sensation between the eyes and extending to back of head." Eyes ache and are often inflamed. Photophobia; abduction, 12°; adduction, 12°. Cover test +. Refraction with homatropin: L.—10.00—2.50 ax. 180=20/40+. R.=—7.00—300 ax. 180 =20/50—.

Muscle exercise and galvanism relieved eye symptoms, and to a great extent the nervousness.

April 20, 1902, patient was requested to come in. Vision was the same or a trifle better, and no symptoms were complained of.

Patient has never lost any time from her sewing on account of her eyes.

It is reasonable to suppose that without treatment this patient would have developed a still higher degree of myopia, perhaps with the loss of useful vision, as the fundus changes were already quite marked.

I feel justified in basing the following conclusions on the results so far obtained:

1. The most important etiologic factor in a very large number of cases of progressive myopia is an insufficient power of convergence.

2. It is immaterial, in so far as the question of treatment is concerned, whether this inadequate converging power is the result of some anatomic defect in the shape or position of the orbit, or whether it is due to a fault in the insertion or innervation of the extrinsic ocular muscles.

3. In all cases in which destructive fundus changes have not already resulted in too great a loss of vision it is possible to check the progress of the myopia or in the proper sense of the word to effect a cure.

4. Since we have no means of knowing who among our young patients will develop a myopia which may lead to great impairment of vision or perhaps blindness, it should be our constant care in practice, and especially with those of us who have to do with the examination of the eyes of children in the public schools, that, in addition to the correction of refractive errors. the eye muscles should receive due attention, and, when found defective, proper prophylactic treatment instituted or advised.

5. For obvious reasons none but specially qualified legal practitioners of medicine should be allowed to prescribe glasses for, or in any way treat, myopia.

DISCUSSION.

Dr. G. C. Savage, Nashville, Tenn., expressed his inability to explain just why some cases of myopia are progressive, and whether or not the want of converging power predisposes to this increase. He illustrated his understanding of the convergence of myopic eyes on the blackboard. The myopia is, say, 3 degrees. Dr. Savage believes that there is a definite relationship between the tenth and the third (the accommodative and convergence) centers in the brain that the accommodation of myopic eyes is effected not by the conjugate centers, but by the basal centers. Now, without accommodation there may be convergence, but he does not believe that it is volitional if the myopia is 3 diopters or more. Unless there is no necessity for activity of the ciliary muscles in near vision, the tenth conjugate brain center is quiet. But without convergence there would be diplopia. Now this is an abnormal or fusional convergence effected by the right and left third basal centers. That may tend toward increasing the myopia, but how much he is not able to say. The thing to do for these eyes, however, is to correct the myopia in full and to advise that the correction be worn for all distances if the patient is young. When the myopia is corrected for distance and the same is worn for near, the accommodative center becomes active, and the third conjugate center becomes active, and convergence is effected by the volitional center and not by the fusional or basal center. Dr. Savage believes that when there is no need for volitional accommodation there is only fusional convergence.

Dr. F. S. Crocker thought it likely that all agree with Dr. Savage that it is the proper thing to correct the myopia fully in nearly all cases, but Dr. Crocker did not think that that has anything to do with the arrest of progress of the myopia. Fifty per cent. in his experience have been fitted by opticians, and he said it is a common experience to find that the optician overcorrects myopia, yet it is progressive.

THE NON-TOXIC AMBLYOPIAS.*

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I believe that the non-toxic amblyopias can be better studied if considered under three heads: 1. Those cases of amblyopia exanopsia due, as is usually believed, to the inability to use corresponding areas of the retina at the same time. This may be due to high refractive errors, to improper balance of the extraocular muscles, or to a non-development of the fusion center *in the cerebrum.*

2. That large group characterized by irregularly contracted but constant fields, impaired vision with careful tests, often only perceiving moving objects, but never interfering with locomotion or similar acts, frequently monocular diplopia, etc., etc., and known as the hysterical amblyopias.

3. That similar but sufficiently different group to justify their place in a separate class, characterized by impaired vision, contracted fields for white and colors always retaining their normal relationships, i. e., no reversal, and being proportionate to the visual acuity; these cases are usually designated as anesthesia of the retina.

Then, lastly, we have the group due to traumatism, often where there is evidence of pathologic changes of the fundus in the form of an old rupture of the choroid or retinal hemorrhage that has left the parts of the fundus uninvolved healthy, *but vision has not returned.* These cases are closely allied to the group just preceding, differing only in their etiology and the limited results that can be brought about by treatment.

The diagnosis of the cases of amblyopia exanopsia is not usually difficult, the defective vision, the apparently normal fundus, the one eye squinting frequently, and the high refractive error in one or both eyes usually renders the case clear from the first. It is difficult to decide whether the squint is due to the defect in vision or the reverse, but in a large proportion of cases the former is doubtless the case.

What shall we do in these cases? I do not believe, when we prescribe lenses and turn the patient away without any other treatment or advice regarding the amblyopic eye, that we have done our full duty, providing the patient is under 40 years of age. Of course, the younger our patient the greater the chances of bringing about permanent improvement, but cases like the one recently reported by St. John Roosa, where a man of 46 lost his seeing eye, and after five years the vision in his amblyopic eye had improved from 20/200 to 20/30 with an appropriate lens, the near vision improving much more rapidly than that for distance, and the several cases of this kind found in ophthalmic literature encourages us to try to improve these eyes.

I have tried numerous devices, such as covering the good eye for one or two hours daily, the amblyoscope, etc., but have found the convex glass cure, as recommended by Fronmuller in 1857, the most satisfactory. I can not do better than to quote his directions in full:

> In this sort of exercise, printed types are best suited as visual objects, since in them there is a change from letter to letter, and, therefore, the attention must be directed uninterruptedly to the object, and mistakes, which have slipped into the estimate of what is perceived, appear immediately by the context, and therefore, invite correction. These printed types must, of course, be well illuminated, and must moreover, be projected on the retina under a large visual angle, in default whereof they appear, even in slight torpor of the light-perceptive apparatus, as images which can not be deciphered. They must, therefore, be chosen large, and brought near the eye. But in order to see as clearly as possible at short distances, convex glasses are usually needed, as the amblyopia exanopsia is, as a rule, accompanied by weakness of the apparatus of accommodation. Convex glasses are, moreover, under all circumstances very useful, as, by an apparent brightness of the retinal images, they increase the distinctness of the perceptions and facilitate the choice of test-types. It is, therefore, the custom to employ them in all cases, at least at first, and to distinguish the exercise in general with the name of treatment by convex glasses. The weakest convex glass must here be first ascertained, which enables the affected eye, the other one being closed, to decipher larger printed types (Jaeger, No. 12-20) at a distance of from 8-12 inches. With this glass the patient must now undertake, two or three times a day, exercise in reading, at first for five minutes, but gradually increasing the time, but should never push the attempt so far as to excite symptoms of fatigue, pain, congestion, or inflammation. On the whole this method of treatment, particularly in the higher degrees of amblyopia, demands in many cases great patience and perseverance, as it is often very long before any perceptible effects make their appearance. Finally, however, the power of vision often increases in favorable cases in very rapid progression. It is then time to pass to weaker glasses, and by lengthening the periods of exercise to rise to smaller and smaller test-types. Sometimes the progress is all at once arrested, and the power of vision does not improve, in spite of all that can be done. We should not then lose courage! for all at once it again advances, and we finally are able to employ glasses which are weaker by many numbers, or we may even reach a point where glasses are found to be superfluous. If the eye has become so far cured that ordinary printed type may be read fluently with weak convex glasses or without any, the reading exercise must still be continued for a time, in order to confirm the cure, and prevent relapses.

In some of these cases my results have been surprisingly good, in others less so, but in all cases where I could command the co-operation of the patient there has been some improvement.

With the hysterical amblyopias the diagnosis is, as a rule, not difficult, the concentrically narrowed field of vision with reversal for colors being characteristic. There are diseases in which we have this contraction, such as atrophy of the optic nerve and glaucoma, but without the reversal for colors. It may seem superfluous to call attention to this, but in their incipiency it often taxes the resources of the most skillful to say whether a disc is normal or not, and it is here that the exact perimetric measurements give us valuable aid, for in the nervous types the degree of contraction is practically equal in all meridians, whereas in the diseases mentioned it usually advances, with irregularly reentering angles toward the point of fixation, as is so tersely pointed out by Swanzy.

Parinaud says:

> This concentric contraction of the field is also found in some cases of cerebral tumor and without neuritis, or it may result from intracranial pressure associated with certain forms of extensive cerebral meningitis; also it is not infrequently observed in epilepsy, and in this latter disease the diagnosis is often difficult, especially where there is temporary amaurosis, which is undoubtedly a manifestation of epilepsy, but unaccompanied by convulsive attacks. This is the same condition that Feré reports as characteristic of the amblyopia following epileptic attacks, i. e., the contracted field not accompanied by dyschromatopsia, especially the peculiar inversion of the color field.

The varying, never constant symptoms usually manifested by all hysterical subjects should be remembered, especially the symptoms of the hysterical amblyope, such as the contracted field with reversal for colors, the varying degrees of diminished vision, frequently monocular, the failure of accommodation, the scotoma and hemiopia, and the less frequent photophobia, blepharospasm, ptosis, etc.

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* Read in the Section on Ophthalmology of the American Medical Association, at the Fifty-sixth Annual Session, July, 1905.

The treatment consists in building up the patient's general health, by cold baths, plenty of outdoor exercise, tonics, electricity, the correction of any error of refraction, etc. These cases all recover, but some of them tax our skill and patience to the uttermost.

Then, we have those cases known as anesthesia of the retina, of which etiologically we have two classes, those of unknown cause and those due to traumatism. Charcot and Leber have asserted that these cases are of a hysterical character and place the seat of the disease in the brain and not in the retina, but do not the results of treatment prove that the trouble is in the retina?

These cases, as recently pointed out by Fox, are characterized by partial loss of vision for near and distance, contracted fields with retention of the normal color relationship, i. e., no reversal. The fundus is normal and refractive errors usually very slight. This usually comes on suddenly, but there may be a gradual loss of vision, and this is not accompanied by photophobia, blepharospasm, anesthesia of the cornea, etc., as the hysterical cases so often are. The traumatic cases are seen after the patient has recovered from an injury, such as a blow on the eye from a fist, or a cork from a bottle, etc. There is usually considerable amblyopia, with concentric contraction of the field, which may continue for a long time, while the ophthalmoscopic appearance may be normal; or there may be a lesion, such as rupture of the choroid, but the lack of vision is much greater than the ophthalmoscopic lesion leads us to expect.

I probably can illustrate better by describing a case recently treated:

Nellie F. was shot with a rifle ball over the right eye, October 8; two weeks later the ball could be felt on the crest of orbit at junction of outer and middle thirds. Small pigment spots could be seen in peripheral portion of retina and a small horseshoe shaped line of pigment about as large as the disc and on the nasal side of same. November 2 she counted fingers at 5½ feet; on January 7, fingers at 3 feet; after using high frequency current five minutes, at 5½ feet; January 11, fingers at 8 feet; after high frequency, 12 feet; January 14, fingers at 18 feet; after high frequency, 20/200. This continued until March 1, vision having reached 15/120, but could not be improved beyond this.

I do not think that there is any doubt that there existed anesthesia of the retina due to traumatism. Of course, there was, in addition, a rupture of the choroid, as shown by the ophthalmoscope, which accounts for the limited improvement.

The treatment of these anesthesias is electricity, which cures all the non-traumatic cases and benefits them; and, while the galvanic current seems to meet all the requirements, the faradic and high frequency are equally as efficient, and I think the latter is the most useful. The electrode should be applied over the closed lids, when the unipolar current is used. The bipolar is equally efficient. In applying the latter the patient can hold the other electrode in his hand. With the reflex amblyopias due to irritation of branches of the fifth nerve and other causes, such as intestinal parasites, I have had no experience.

DISCUSSION.

Dr. G. C. Savage, Nashville, stated that within the past two years he has had under his care a patient who goes to prove that the amblyopia of squint is mental and not ocular. The patient was a railroad man, but how he got into the service Dr. Savage does not know. He had one blind eye and one good one, the blind eye turning in toward the nose. He was on a train approaching Nashville, going up a steep grade, when a cinder penetrated the cornea and lens, producing a traumatic cataract in the good eye. The next morning he was taken to Dr. Savage's office almost entirely blind. The lens grew more and more opaque. In the meantime he had only the other eye to depend on, and it swung straight while the injured eye turned in toward the nose. In less than ten days the vision arose from 10/200 to 20/30. Every one of these cases should impress on physicians the fact that the blindness of the squinting eye is mental and not ocular. The first thing that should be done is to correct the muscle error, not by complete tenotomy, but by partial tenotomy and advancement, then the physician will never be confronted later by that patient with one eye looking in the opposite direction. The patients should be treated by operative measures first, and then the vision in the blind eye should be developed. The amblyoscope is, of course, a splendid instrument for that purpose. Atropin may be used in the good eye so that near vision with it will be impossible. Dr. Savage emphasized the necessity for first correcting the focal and muscle errors, thus making it possible to have binocular single vision, and then beginning training the blind eye. Dr. Savage mentioned a case of hysterical amblyopia. About six years ago a woman became totally blind in both eyes. Her actions led Dr. Savage to believe that the condition was hysterical. Pupillary reaction was gone. He told her with great positiveness that she would recover, that she would not be long in recovering, and that she would recover just as suddenly as she had lost her sight. One evening, when she was brought in by her sister, he said, "If you are not seeing by morning I am going to have you hypnotized." That night he received a telephone message to come to the boarding house where she was stopping. The patient was sitting there happy and radiant, and seeing as well as she had ever seen in her life.

Dr. Dudley S. Reynolds, Louisville, said that a very common class of cases which, if not entirely ignored, are at least accorded insufficient attention are those cases of injury due to concussion, railroad accidents, trauma amblyopias. In these cases there is gradually increasing peripheral limitation of the field of vision and at the same time there is gradual reduction of the acuity of perception. He has known of cases of this kind in which no recognition of the nature of the trouble occurred for a year or for a year and a half after the accident, when it was noticed by the patient that the field of vision was narrower, or that acuity of perception was obtunded. Dr. Reynolds disagreed with Dr. Moore that no ophthalmologic indications are present. While these may be slight, they are nevertheless distinct. He is sure, too, that amblyopias that are non-toxic traumatic amblyopias, are not benefited by any form of treatment. They are very common and in some instances progressive, leading to entire or nearly entire blindness.

Dr. William Campbell Posey, Philadelphia, spoke in favor of the amblyoscope in developing vision in the squinting eyes of children. He has used it a great deal in the last few years and has found it a very valuable means of re-establishing binocular vision. In order that the treatment with this instrument should be efficacious, it is necessary that it should be employed before the child has arrived at the age of six years; if it be postponed until after that age the results will be disappointing. It should be remembered that treatment for the correction of squint can not be begun too early, and even at the age of one year, if the squint has been diagnosed, atropin should be used in the good eye, with a view to blurring its vision and inviting the patient to use the squinting eye. Some clinicians instill atrophin into both eyes. While when used in this way the spasm of accommodation may be overcome and the relationship between accommodation and convergence re-established, the vision in the squinting eye is not improved, and the chief value which may be gained from the employment of the drug is not attained. At the age of 2 years the proper glasses should be put on the child, the lenses being selected by retinoscopy. Mr. Worth orders glasses at even a younger age, but Dr. Posey thinks that as the frames must be bound on the head by tapes, there is some danger in such young subjects, in interfering with the proper development of the bones of the face, and possibly with the eyes themselves, from pressure. The amblyoscope may be used at the age of 3 or 4 years, and if employed persistently, the results obtained are very gratifying.

Dr. S. D. Risley, Philadelphia, declared that, in the management of squint occurring in early childhood we should not be unmindful of the somewhat limited group of cases in which the convergence is not due to the usual error of refraction, but is associated with, and probably caused by a central blind spot. It is not possible to demonstrate the presence of this in very young children, but its existence should be suspected when the well-known methods of treatment fail to correct the deviation. Dr. Risley has a number of times been able to verify this diagnosis after the child was old enough to permit a demonstration of a macular scotoma. He agreed with Dr. Posey and Dr. Moore that all cases of strabismus, when the deviation is due to refraction error, should be corrected by glasses very early in life. When seen early and when the correction is accurately made, there need be but little difficulty in securing binocular vision, even without the aid of the amblyoscope. Dr. Risley expressed surprise to hear Dr. Savage give credit to Dr. Worth for devising the use of atropin in the good, or fixing eye, to compel the use of the deviating eye. Dr. Risley has used the drug in this manner during his entire experience and the method did not originate with him so far as he knows. He called attention to the fact that in amblyopia of the deviating eye impaired vision may be due to the peculiar error of refraction, or to commencing disease in the macula, and the apparent amblyopia disappear as soon as these are corrected. Which eye shall deviate may be determined by the greater impairment of vision produced by the higher refraction error or by asymmetrical corneal meridians, for example; or it may be by a faulty attachment of one or more muscles to the globe, a condition which is often foreshadowed by certain deformities in the skull which lead to abnormalities in the shape of the orbit. It is obvious, therefore, that in the study of strabismus or other defects of ocular balance each case must be considered separately. We can formulate no law by which all cases are to be compared. We can not hope to secure by Worth's amblyoscope, or by any other instrument, binocular single vision until the refraction error has been accurately corrected, and not then in the presence of macular scotomata, or in cases where the anatomic relation of the muscles is at fault. In these last named cases the only hope is in prudent surgical interference.

Dr. Leartus Connor, Detroit, stated that there is another class of cases, perhaps somewhat rare, in which nothing appears to account for the amblyopia occurring after previously good sight other than malnutrition, presumably of the retina. A year ago last October a man over 60 years old came to Dr. Connor with a history of good health previous to the past four months, when he had been gradually losing sight, until his vision was reduced to 6/200 in one eye and 8/200 in the other. The ophthalmoscopic image showed nothing except that the retinal artery was distinctly smaller in either eye than normal. The field of vision was very decidedly restricted. The refractive errors had been perfectly corrected. The only thing that constitutionally seemed to have any bearing on the case was a persistent indigestion. Dr. Connor employed vibratory massage on the eyeball and within a month vision was 20/200, and at the end of three months the patient could read Jaeger No. 1 and had 20/20 vision for distance. The only two factors observed in the case were the diminished blood supply to the retina and the poor digestion. The case puzzled Dr. Connor at the time and he is not absolutely clear about it yet, but the patient's improvement certainly followed the improved nutrition of the retina. Putting this observation with others. Dr. Connor is inclined to think that in not a few cases there is impaired digestion and interference with nutrient processes which tend to diminish the power of the special senses.

Dr. T. W. Moore said that from Dr. Savage's remarks he inferred that Dr. Savage has been able to produce binocular vision in these cases in which the patients were over 6 years of age. Dr. Moore has tried it in a few cases, but has absolutely failed. He thinks that has been the usual result. Recently he has only tried to increase the vision in the blind eye in patients over 6.

EXPERIMENTAL AND CLINICAL EVIDENCE OF DYNAMIC (SPASTIC) ASTIGMATISM.*

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Dynamic astigmatism may be defined as a condition of the eye due to dynamic changes in its media which prevent homocentric rays from being brought to a focus on the retina.

That such dynamic changes occur there is a preponderance of evidence and opinion on the part of Javal,[1] Georges Martin,[2] Landolt,[3] Dobrowolsky,[4] Oliver,[5] Noyes[6] Panas[7] and others. Among authors who deny this condition I note only Bull[8] and Tscherning.[9] The authors in the first group, while stating briefly a belief in the existence of the condition, are nearly all silent as to its clinical significance, implying, apparently, indifference to it in this respect.

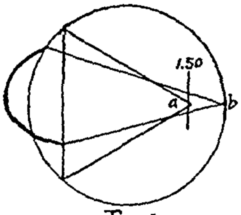

Fig 1

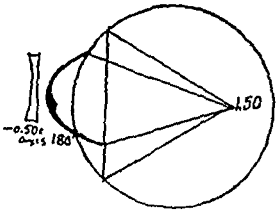

Fig. 2

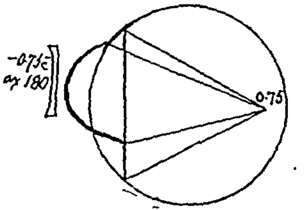

Fig 3

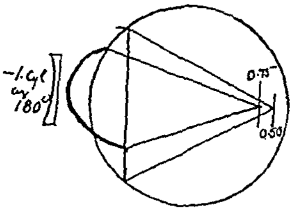

Fig 4

As far as I know, no one has gone so carefully and exhaustively into the subjective phenomena pointing to dynamic astigmatic contractions as Georges Martin[10] of Bordeaux, who published a series of papers entitled "Etudes sur les Contractions Astigmatiques du Muscle Ciliaire," which were afterward collected and published in a small volume of about 200 pages. He records in detail about 150 cases in 300 eyes, and the volume is dedicated to Javal and Schiotz. In it the subject is presented with the utmost minuteness of observation and record in nearly every aspect in which it is possible to view it. When Martin's papers appeared, seventeen years ago, they attracted my attention because I observed facts clinically which apparently corroborated his. I was not convinced, however, though again and again, in the years following, in doing refraction work, I was reminded of the subject by phenomena similar to Martin's records.

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* Read in the Section on Ophthalmology of the American Medical Association, at the Fifty-sixth Annual Session, July, 1905.

[1] Annal, d'Oculistique, t. 88, p. 33, July, 1881, p. 1.
[2] Ibid., 1886-1887.
[3] Refraction and Accommodation of the Eye, pp. 301, 302.
[4] Arch. f. Ophth., xix, p. 51, 1868.
[5] Norris and Oliver, vol. iv, p. 420.
[6] Diseases of the Eye, 1890, p. 111.
[7] Traité des Maladies des Yeux, vol. 1, p. 141.
[8] Annal. d'Oculistique, Feb., 1892.
[9] Optical Physiology (English Transl.)
[10] Annales d'Oculistique, 1886-1887.

It was not until 1902 that I began systematically to record these observations, and I was startled to find how accurate were his records when duly analyzed. In comparing his findings with mine, I found a difficulty owing to his peculiar method of marking his astigmatic dial and his trial-frame cells, and probably this has proved an obstacle to others in this country, since we follow the mathematical protractor.

To save time in recording cases, Martin adopted certain signs of abbreviation. To indicate that the dial lines appear equal, he wrote the sign ⊙ which exists in typography, especially in works on botany. If a line on the dial appeared clearer than the rest, he wrote the sign ○, writing by the side of it the number of degrees of said line. The principal portion of Martin's treatise deals with three forms of dynamic contractions: *Contractions rénitentes,* which I translate tonic contractions; *contractions élastiques,* which I translate clonic contractions, and *contractions résistantes,* which, of course, are the same in English. About half of the treatise deals with what Martin terms "associated partial contractions," or astigmatic contractions in an astigmatic and "active" eye, producing, by the law of associated movements (Vulpian), a functional astigmatism in the other, "passive" and non-astigmatic eye.

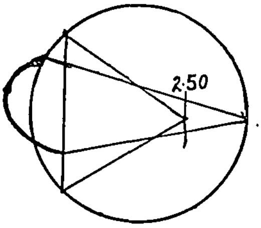

Fig. 5.

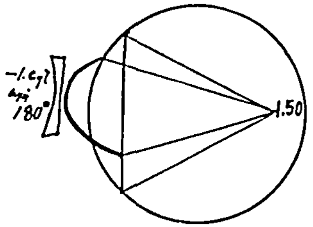

Fig. 6.

This paper permits me only to outline Martin's clinical methods and findings, to adduce some of my own, and to describe briefly certain subjective and objective investigations of my own and other eyes, which apparently prove dynamic astigmatism caused by the accommodative apparatus on the one hand, and by the extraocular muscles on the other.

I present first some simpler examples of Martin's cases, using the notation of our own charts and trial frame, but premising that I do not assume the correctness, as he did, of Javal's dictum of 1887, that the corneal astigmatism constitutes, almost without exception, the total astigmatism. I therefore select some of the cases in which atropin was used three or more days.

Miss ——, aged 17. Intense chorionic blepharitis. Javal (ophthalmometer), 1.50 D. to rule. O. D. V. 1/1?? Em. ⊙ w.+ 0.50s. ⊙ 90.
w.—0.50c. ax. 180° ⊙ 1/1?
w.—0.75c. ax. 180° ⊙ 1/1
w.—1.00c. ax. 180° ○ 180 1/1?
Under atropin, w.—1.50c. ax. 180° ⊙ 1/1

Martin's tests may be graphically analyzed thus:

Under atropin the course of the rays is as in *Fig. 1, a* being the position of the focal line of those passing through the vertical, and *b* those through the horizontal meridian. Fig. 2 represents their path before the use of atropin with—0.50c. ax. 180° before the eye. Here the —0.50c. ax. 180° has thrown the vertical meridian rays back to that extent (myopia 1.00 D.) where, by a dynamic astigmatic contraction affecting the horizontal meridian rays, all rays meet at —1.00 D., the result being a myopia of 1.00 D. with equalized appearance of the astigmatic chart (⊙), but vision of 1/1?

Fig. 3 shows the path of the rays with a —0.75c. ax. 180° before the eye.

Now, the vertical meridian rays are thrown back to that extent, but the contraction affecting the horizontal meridian rays has relaxed; i. e., according to Martin the contraction is elastic (clonic); for, at the very first test, with no lens before the eye the chart lines were equal, and the myopia 1.50 D., the contraction has relaxed 1.50 D. —0.75 D. = 0.75 D., and the result is a myopia of 0.75 D. with the chart lines equalized (⊙) and V. = 1/1. Fig. 4 shows the path with —1.00c. ax. 180° before the eye. Here the vertical meridian rays have been thrown back so that in that meridian there remains only 0.50 D. of myopia. But now the contraction affecting the horizontal meridian rays does not relax, the rays still meet at 0.75; hence the horizontal line on the chart becomes the clearest. According to Martin, there is, therefore, a tonic (rénitente) contraction of 0.75 D. affecting the horizontal meridian. The result is astigmatism and V. lessened to 1/1.

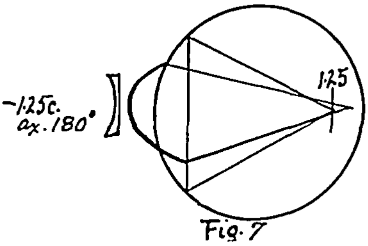

Fig. 7

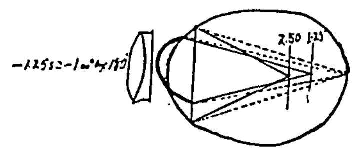

Fig. 8.

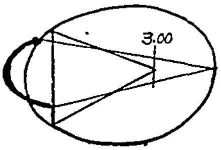

Fig 9.

A more striking case of Martin illustrates a much higher degree of tonic contraction:

L., aged 9. Corneal astigmatism 2.50 D. to rule.
Without atropin O. D. V.=2/5? ○90; w.— ax. 180°. ⊙ V. 1/2.
Without atropin O. D. V.; w.—1.25c. a V.
Without atropin O. D. V.; w.—1.25s.⊂-
V. 2/3.

Fig. 5 shows the path he rays und
ducing simple myopic

Fig. 6 shows the pat rays bef
atropin, with —1.00c. ees
The cylinder has thrown l merid
to a focal point of 1.50 e test
equalized chart lines, an ly impro
Martin therefore conclu astigma
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Fig. 7 shows the path th —
180 degrees before the e er ha

the vertical meridian lines back to the focal point, 1.25 D., but the contraction affecting the horizontal meridian lines has relaxed (clonic), and the vertical line of the chart is the clearest.

Lastly, with —1.25s.⊃—1.00c. ax. 180 degrees, the chart lines are equalized and vision becomes 2/3, equal to the vision under atropin with full correction by —2.50c. ax. 180 degrees. The contractions of the horizontal meridian thus neutralized are shown in Fig. 8; the black lines indicate a myopia in the vertical meridian of 2.50 D., and the tonic contraction affecting the horizontal meridian rays, of 1.25 D. The dotted lines indicate both the effect of the cylinder on the vertical meridian rays, and the disappearance of all contraction in the horizontal meridian under atropin.

The highest degree of dynamic astigmatism I have seen was in the *following case:*

W., aged 41. April 4, 1904, complained of defective vision and severe headaches. He has never worn glasses. He has been exposed late at night to electric light. Eyes are very irritable.

Examination.—V. O. C. = 21/29 ⊙$_{oo}$. Neither minus or plus cylinders or spheres improved vision. Hyoscin hydrobromate .25 per cent. for 48 hours.

V. O. D. w.—3.00 cyl. ax. 5°=21/10???, ⊙

V. O. S. w.—3.00 cyl. ax. 175°=21/16, ⊙

The path of the rays with cycloplegic in O. D. is shown in Fig. 9.

Since both spheros and cylinders were refused before the use of the cycloplegic, there was a tonic dynamic contraction affecting the 5° meridian rays of 3 D.

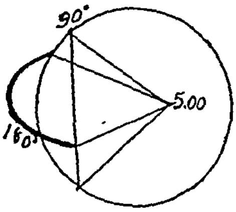

Fig. 10

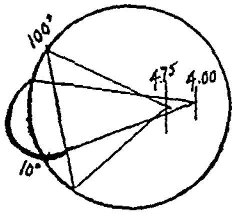

Fig. 11.

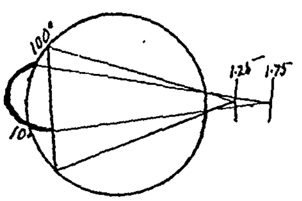

Fig. 12.

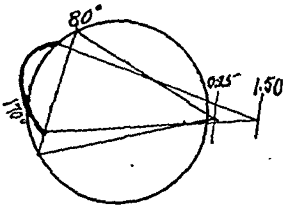

Fig 13.

Among a large number of my own cases of the condition under consideration I select two examined after twelve and eleven years, respectively, as of value in showing how persistent are dynamic contractions, and how they may mask the true static refraction.

S. S., girl, aged 17, was seen first in 1892. Subjective tests then gave myopia corrected by: O. D.—5.00 sph. ⊙ O. S.—2.25 sph. ⊙

In 1895, aged 20 by skiascopy: O. D.—5.00 sph. O. S.—2.25 sph.

January, 1895: Atropin 1 per cent. for four days. Skiascopy; O. D.—4.50 sph.⊃—0.25c ax. 90°! O. S.—2.25 sph.

Trial case: O. D. V. w.—5.00s=20/20?? ⊙. O. S. V. w.—2.75s=20/20 ⊙

In 1904, nine years later, aged 29, Javal: O. D. 10± 1.37 D. O. S. 150° ± 0.50D.

O. D. V. w.—4.00 sph.⊃—0.75 cyl. ax 10°=21-19???⊙

O. S. V. w.—2.50 sph.=21/19, 21/13???

The path of the rays in O. D. in 1895 is shown in Fig. 10; in 1904, in Fig. 11.

Comparison of cuts shows a disappearance in 1904 of a tonic contraction affecting the meridian of 10 degrees, of 1.00 D. which atropin had not uncovered.

N. L., girl, aged 10, 1894. Asthenopia. Atropin 1 per cent. instilled for one week:

O. D. V. w+1.75s.⊃—0.50 cyl. ax. 10°=6/5,⊙

O. S. V. w.+1.75s.=6/5.⊙

A year later, skiascopy gave the same refraction in each eye, and Javal O. S. 1.25 to rule. Fig. 12 shows the path of the rays under atropin in 1894, in O. D.

January, 1905, aged 21. She has worn, for near only, a pair of +1.25 cylinders, axes 90°; has done much drawing. O. S. mucopurulent conjunctivitis.

Trial case: O. D. V. w.+1.50s.⊃—1.25c. ax. 170°=21/16, ⊙ O. S. V. w.+1.50s.⊃—1.25c. ax. 10°=21/16. ⊙

The path of the rays in O.D. in 1905 is shown in Fig. 13, which, when compared with Fig. 12, shows that in 1905 there was a contraction in the O. D., changing the principal meridians from 10 degrees and 100 degrees to 170 degrees and 80 degrees. Also that there was a general contraction of 0.25 D., and a tonic dynamic contraction in the meridian of greatest refraction of 0.75 D. It might seem well that a cylinder of 1.25 D. was accepted in 1905, as against one of only 0.50 D. accepted under long use of atropin in 1894. But the discomfort and irritation of the eyes and the conjunctivitis favor the original atropin correction. How often, after careful correction of compound hyperopic astigmatism, we are forced to increase the sphere, and to decrease the strength of the cylinder.

That Javal was himself the subject of a high degree of astigmatism against the rule is, I think, perhaps fairly well known. That his eyes corrected this, in his opinion, is not, I think, so generally known. At the International Medical Congress at London in 1881 he cited these facts, stating that when 16 years of age he saw the stars as perfectly round points when he made an effort difficult to maintain. When 24 his manifest astigmatism was about 2.00 D., and at 44 it was 2.50 D. Javal recorded one of his cases, M. L., whose corneal astigmatism at the age of 34 (1865) was 6.50 D., and the subjective error but 4 D., indicating to Javal a dynamic contraction of 2.50 D. In 1869 the subjective astigmatism was 6 D., and in 1881 7.50 D.

Samuel Theobald[11] in 1885 cited three similar cases in hyperopes observed during twelve and sixteen years in which the astigmatism increased from 1 to 3 D.[10]

FREQUENCY OF THE CONDITION.

Dynamic astigmatism, in my own experience, exists very frequently, and nearly always in tired, irritable eyes which are affected with organic (corneal or lenticular) astigmatism. It is often overlooked simply because it is so often thought that the ciliary muscle and the convergence excess have been paralyzed completely by some weak or strong cycloplegic.

We say: "The tongue can no man tame." Who can tell when he has subdued the ciliary muscle? There are times when no man can tame it; nor are such times infrequent. I have tested hyperopic eyes which accepted no cylinders, though the corneal astigmatism was 1.50 D., yet by patient, so-called "fogging" for days nearly this whole amount became manifested, together with a higher degree of hyperopia.

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[11] Amer. Jour. Ophth., July, 1885.

EFFECTS OF AGE, STATE OF HEALTH AND TEMPERAMENT.

It has been generally noted that dynamic astigmatism predominates in youth and disappears at the age of 40 or 50. As to disappearance at the presbyopic age, Javal and Martin note numbers of cases as exceptions, and I have seen undoubted ones between 50 and 65, and once in a woman of 73. General debility, the asthenic state, etc., prevent dynamic contractions, which, in the young, reappear when the patient recovers normal vigor. Martin exhibits a conservatism that points a lesson to some extremists of this day who would disenthrone migraine as a distinctly nervous disease. He states: "The contraction alone is incapable of producing neuralgic crises; it is necessary that it occur in a subject constitutionally affected with a diathesis (arthritism, or herpetism)."

MECHANISM OF DYNAMIC ASTIGMATISM.

This is not easily explained, for there is even yet no universal agreement as to the mechanism of accommodation. Martin[2] disavows any intention of asserting that certain fibers of the ciliary muscle contract, but only that the partial contraction in question causes a convexity of the lens in a certain meridian. Dr. Chas. A. Oliver[12] remarks that during astigmatic tests "it will at times be found not only that the amounts of the defect change when the examinations are made with the two eyes simultaneously, but that the relative angles of the two principal meridians likewise change. This is possibly to be accounted for in a measure by the action of the extraocular muscles in producing, both directly and indirectly, different degrees of tension on the eyeballs during their combined functioning."

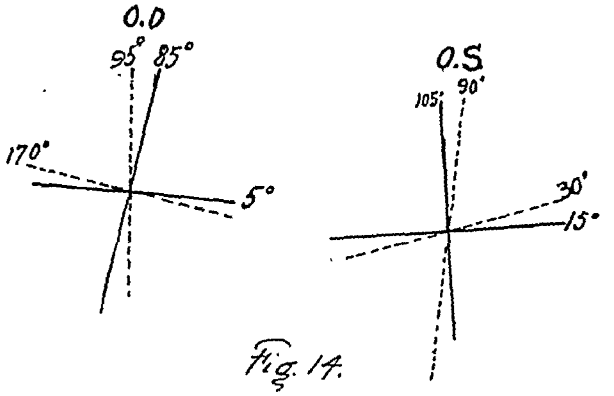

Fig. 14.

Priestly Smith[13] cites a case in which in one eye there was total paralysis of the externus and internus, the other muscles being intact. The patient complained that vision of this eye was impaired. The ophthalmoscope showed no change in the fundus or media, but skiascopy showed 1.00 D. of astigmatism in the vertical meridian corrected with a —1.00 D. cylinder axis horizontal to normal vision. On recovery from the paralysis, all traces of astigmatism vanished.

This brings me to some investigations of my own, made on my own eyes and on those of others, in the endeavor to estimate the relative importance of the action of the accommodative apparatus on the one hand and of the extraocular muscles on the other, in producing dynamic astigmatism. These comprise two kinds of experiments:

1. The objective examination of the corneal curvature by the ophthalmometer with the eyes at rest, and the changes in curvature and direction of the meridians due to more or less convergence and accommodation.

2. Tests with the astigmatic chart at 20 feet in a static state of rest in the primary position, and the changes in the meridians and astigmatic curvature produced by concave spherical lenses resulting in increased accommodative effort with overaction of convergence (esophoria).

Subjectively, I have simple hyperopic astigmatism of 0.75 D. in each eye, accepting + 0.75c. ax. about 75 degrees, O. D., and same cylinder axes, exactly 105 degrees, O. S.

My corneæ have been repeatedly and carefully measured by different observers, and I have the faculty of converging moderately or excessively with either eye alone, the other remaining motionless in the primary position. On converging, the reflected and tangent images of the mires are always seen to separate in the meridian of least curvature 0.25 D., and to overlap in the one of greatest curvature from 0.12 to 0.25 D. Measurements on the arcs of the instrument give like results. Besides this, the principal meridians of each eye are shifted. Each nearly horizontal meridian inclining nasally 15 degrees, and each nearly vertical one outward 10 to 15 degrees, as shown in Fig. 14.

Taking the left eye, when converging the right on a point 8 to 10 inches in the median line, the tangent images at meridian 15 degrees of the left cornea are seen to separate from 0.25 D. to 0.37 D., and to overlap about 0.12 D. near the meridian of 105 degrees. I say *near* these meridians because the principal meridian 15 degrees now becomes 30 degrees, and 105 degrees becomes 90 degrees; the more horizontal (15 degrees) inclining nasally 15 degrees, and 105 degrees inclining temporally 15 degrees.

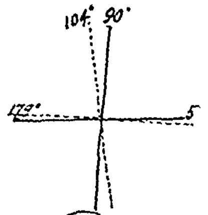

Fig. 15.

A fellow physician has in the left eye a corneal astigmatism 15 degrees ± 0.75 D. On convergence, in contrast to my own case, the horizontal meridian inclines outward 6 degrees and the vertical 9 degrees inward, the curvature increasing slightly in each. (Fig. 15, the dotted lines indicate the meridians during convergence.)

In order to determine whether or not by subjective tests there is dynamic astigmatism produced in my left eye by simultaneous convergence and accommodation, and whether this bears any direct relation to the corneal asymmetry similarly induced, during three years I have proceeded as follows: With my correction, +0.75c. ax. 105 degrees, before this eye, the right covered, I regard an astigmatic chart and tangent scale at 6 meters. The dial lines appear equal and clear; exophoria 2 degrees. Now, placing a minus 3.00 D. sphere before the left eye and cylinder, and by a strong effort of accommodation overcoming the induced hyperopia, esophoria of 18 to 20 degrees is induced (9 to 10 degrees of actual deviation, equivalent to convergence on a point of close to 8 inches). The chart lines 30, 45 and 60 degrees now alone appear distinct, and all the lines are equalized by +0.50 cyl. axis 135 degrees, indicating either a decreased relative curvature in the corneal meridian 45 degrees, or an increased one in meridian 135 degrees. The result of this experiment never varies, and it proves conclusively the production of dynamic astigmatism due either to accommodation or convergence, or both. Apparently, there is a direct relation between the corneal astigmatism produced in the left cornea by both objective and subjective experiments (Fig. 14).

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[12] Norris and Oliver, vol. iv., pp. 430, 431.
[13] Ophth. Rev., vol. iv, p. 354.

The inclination of the principal meridians in my own eyes can not be explained by the outward physiologic torsion, which, according to Le Conte's laws, occurs in horizontal convergence from the primary position; for experiments show that this outward torsion of my eyes, converging to 8 inches, amounts to only 3 degrees, whereas, as seen in Fig. 14, the outward inclination of the nearly vertical meridians amounts to 10 and 15 degrees, while the nearly horizontal ones actually incline inward. There is, therefore, a distortion of the corneæ, and this, I believe, is due to pressure during convergence by the superior, inferior and internal recti. This pressure is quite as great in marked esophoria of accommodative origin.

In concluding this paper, I insist that dynamic astigmatism is of practical clinical importance, and the gist of my demonstration is a plea to consider in many cases the total refractive error in doubt until time, cycloplegic's rest, aided if necessary by the hypodermic use of hyoscin hydrobromate and bromids or other sedatives, with patient "fogging" at times, has eliminated all dynamic contractions. The condition is frequent, not rare, and failure to recognize it often accounts for the discrepancies in the refractive findings of competent ophthalmologists.

590 Sutter Street.

DISCUSSION.

Dr. William Campbell Posey, Philadelphia, declared that the paper offered a satisfactory explanation to him of his failure to relieve some three or four cases during the last two or three years. He had refracted each eye separately very carefully, under a mydriatic, and had established the fact to his satisfaction that the axis of astigmatism in each eye was, say, at 90 degrees. The lenses were then ordered with the cylinders at this axis. In a few days, however, the patients returned, saying that the glasses did not give comfort, and that they noticed that if the lenses were slightly tilted they gave better vision and comfort. The work was then gone over a second time, only to find that when tested monocularly the axis was at 90 in each eye; with both eyes open, however, and the lenses in position, it was found that the axis of the astigmatism in one of the eyes had shifted about 10 degrees. That this change was due to an unusual action of one of the extraocular muscles on the eye Dr. Posey thinks there can now be no doubt.

Dr. D. de Beck, Seattle, Wash., related that during college life he was perfectly well in every way, but suffered from asthenopic headaches and in the beginning of his medical studies he still suffered; when he began eye work he found that either eye could read 20/20 readily. His eyes were tested under atropin by his late teacher, Dr. Seeley, who found that he had a simple hypermetropic astigmatism of 1.50 D., with an inclined axis, 105 in the right and 75 in the left. With these he saw perfectly well and has worn that correction for twenty-five years. He also had a slight but well marked cyclophoria. On taking off these glasses at that time he would find that he had a vision of 20/70, but that in a little while he could work down the line until he could read 20/20. Putting on the glasses would for a few moments blur the vision and then he would again have 20/20 vision. In other words, he could adjust for the defect, but as years went by the adjustment became less and less perfect. This personal obesrvation Dr. de Beck thought was in line with Dr. Eaton's experience.

Dr. Mark D. Stevenson, Akron, Ohio, said that when lenses having strong cylinders are prescribed, he rotates them in their frames until they are in the correct position before the eyes, so that the axis of each cylinder may correspond to one of the chief meridians of each eye. In doing so he has observed that the directions of the principal meridians sometimes change when binocular single vision replaces the vision of one eye. He has also observed this change during the act of accommodation.

THE INCIDENCE OF HEART DISEASE IN SAN FRANCISCO.*

WILLIAM FITCH CHENEY, M.D.
Professor of Principles and Practice of Medicine, Cooper Medical College, and Physician to Lane Hospital.
SAN FRANCISCO.

My object in writing this paper is to throw some light on the frequency of organic heart disease in San Francisco; on the relative frequency of the various forms; and on the factors that make the frequency what it is. In order to accomplish this purpose I have drawn on two sources of information. The first of these is the records of the General Medical Clinic in the dispensary of Cooper Medical College; and the second is the autopsies performed by my colleague, Dr. William Ophüls, professor of pathology in Cooper Medical College. In the medical clinic I have had opportunity for personal investigation of the cases concerned in the preparation of this paper, and know the facts to be as stated. As regards the autopsies, they were all made by Dr. Ophüls himself, who has kindly placed his personal records at my disposal.

Some explanation must be given at the outset as to what has been included under the term "heart disease." It is so often difficult to decide that the heart is really unsound, and that the heart symptoms of which complaint is made are not, in fact, due to disease of some other organ. Every clinical investigator must have certain rules for his guidance, and it is only fair to state first of all what rules have been followed in determining the presence of heart disease in the cases herewith reported.

First.—Although it may seem superfluous to state that no case has been diagnosed on symptoms alone, yet this statement is not superfluous, because such diagnoses are sometimes made.

Second.—No case in the group reported has been diagnosed on physical signs alone, especially not by the mere presence of murmurs. Nothing is more familiar to the teacher of medicine than the certainty with which a medical student rushes from the discovery of a murmur to the conclusion that valvular disease exists; while with increasing experience the murmur itself becomes less and less important as an indication of organic disease. I would not have it suspected, therefore, that diagnoses have been made in this way among the cases collected. On the contrary, so great has been the anxiety for conservatism in diagnosis, that no cases have been set down in the records as heart disease unless besides the murmur there was definite evidence present of alteration in the area of cardiac dullness, with symptoms and signs of broken compensation, either at the time of the first examination, or previous or subsequent to it. In other words, heart disease has not been considered to exist, unless it caused some, at least, of the well-known symptoms and gave rise also to the well-known physical signs.

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* Read in the Section on Practice of Medicine of the American Medical Association, at the Fifty-sixth Annual Session, July, 1905.

Third.—Cases of cardiac neurosis have been entirely excluded. The patient that comes complaining of the heart is one of the most common visitors at any dispensary clinic; but rarely are such patients found to have organic disease of the heart. Naturally among the class who apply at an out-door clinic, there are many of the victims of various forms of dissipation and excess. Poverty, ignorance and vice do not always go hand in hand, but they are extremely frequent associates in the people with whom we have to deal. The various forms of cardiac neurosis—palpitation, tachycardia, heart pain, consciousness of heart action, have been observed even more frequently amongst our patients than real heart disease. But these false cases have been carefully distinguished from the true and all have been omitted in making up the list presented in this paper.

Fourth.—Still another point to be made clear is, that cases of hypertrophy or of dilatation of the heart, secondary to some other disease, have not been included in this list. For instance, in all the cases of chronic nephritis with secondary heart changes, no record has been made in this group of heart cases. Similarly with cirrhosis of the liver, pulmonary tuberculosis, the primary anemias and diabetes, no cases have been recorded as having heart disease, no matter what secondary changes were manifest in the heart. In other words, our effort has been to limit the inquiry to cases in which the heart was plainly the organ primarily diseased. The greatest difficulty has been encountered in the effort to determine the relation of arteriosclerosis to myocardial changes. Here it has been found practically impossible to decide whether one or the other process first took place, or whether they both developed simultaneously. In no case, however, has myocarditis been diagnosed without the presence of definite symptoms and physical signs referable to the heart, no matter what grade of arteriosclerosis was demonstrable in the peripheral vessels.

I. FREQUENCY OF HEART DISEASE IN SAN FRANCISCO.

After these preliminary explanations I pass to the consideration of the first question, viz.: How often does heart disease occur in San Francisco? I have looked over the records of 3,648 cases seen in the medical clinic of Cooper Medical College, during the five years from Jan. 1, 1900, to Jan. 1, 1905. Among these there occurred 135 of organic disease of the heart. Ninety-seven of these cases came to the clinic with the symptoms and signs of broken compensation. In the other thirty-eight compensation was fair at the time of examination, but the physical signs were nevertheless definite and there was a history of broken compensation on some previous occasion. Several of the cases came to the clinic repeatedly with attacks of broken compensation occurring again and again during the five years. The percentage of heart cases was therefore 3.7, or, in other words, out of every thousand who presented themselves for all sorts of medical diseases, thirty-seven were found to have unsound hearts.

The records of autopsies by Dr. Ophüls number 640. Among these autopsies sixty-one showed organic disease of the heart. This makes a percentage of 9.5; which means that out of one thousand cases of death from all causes, ninety-five bodies showed organic disease of the heart. The marked discrepancy between the clinical figure and the pathologic figure may be explained in several different ways.

First.—It is common for people with a slight degree of organic change in the heart to have no symptom of ill health referable to these changes; and to die from some other acute illness, when systematic investigation at autopsy reveals lesions not previously suspected to exist.

Second.—Slight changes in the structure of the heart valves and heart muscle may give rise to such dubious physical signs that the clinician may not recognize their presence, even though he has sought for them.

Third.—The total number of cases is very different in the two sets of records; and if the total number were equal in each, the proportion of heart cases might be more alike.

Fourth.—It must be remembered that the cases taken from the clinic records were all ambulatory; while Dr. Ophüls' autopsies were made almost entirely upon cases that died in the City and County Hospital, or in Lane Hospital. People who go to a dispensary clinic must of necessity be well enough to get about; but people who go to bed in a hospital, do so because they are too ill to be any longer about. Once in a hospital they are very likely to reach the pathologist, and once in the hands of a competent pathologist things are sure to be found out about them that were never known before. It is impossible, therefore, to draw any final conclusion as to the exact incidence of heart disease in this city, and as to where it lies between 37 per thousand as a minimum and 95 per thousand as a maximum. So far as I can find out, no previous attempt to establish this has been made, and this pioneer effort must of necessity give only an approximate estimate.

II. RELATIVE FREQUENCY OF THE VARIOUS FORMS.

In considering this point, a number of cases were naturally found where there appeared to be a lesion at more than one valve; but in these cases the diagnosis was always made of the lesion that seemed to predominate and to control not only the physical signs but also the clinical history. As was to be expected, the lesion most often met with was mitral regurgitation, of which there were sixty-five cases. Next in frequency came myocarditis, of which there were forty cases. While it is recognized that it is never possible to say with absolute certainty whether the myocardial change is fibroid or fatty in character, still in an overwhelming majority of the myocarditis cases there were associated changes in the vessels which spoke for fibroid change; and in only five did it seem likely that the condition present was a fatty degeneration of heart muscle. It has seemed to us that the proportion of myocardial disease to valvular disease is rather a large one, and this conviction based on clinical observation seems to be borne out by the pathologic findings in Dr. Ophüls' autopsy reports, as will presently appear. Third in order of frequency came aortic regurgitation, of which twenty-one cases were observed. All of them were typical and in two of them that died during the time of their attendance on the clinic, autopsy confirmed the diagnosis. Finally there were observed nine cases of pure mitral stenosis. I am convinced that this number does not convey a proper idea of the frequency of this lesion; but as no patients under 12 years of age are admitted to this clinic, and as mitral stenosis is essentially a lesion of childhood, naturally the number herewith reported falls far behind the other forms. As it is, seven of the nine cases observed were in individuals under 20. No case was seen where a diagnosis of aortic stenosis could conscientiously be made.

Turning now to Dr. Ophüls' autopsy reports, out of the sixty-one cases of heart disease discovered, forty-three were cases of endocarditis and eighteen of myocarditis. As regards the orifices affected, the aortic alone was found involved eleven times; in one case no severe lesion, in three cases largely stenosis, and in seven cases insufficiency. The mitral alone was found involved ten times; in seven cases no severe lesion, in one case largely stenosis, in one case largely insufficiency, and in one case both. Both aortic and mitral valves were found involved simultaneously seventeen times. In the eighteen cases of myocarditis, fourteen showed partial obstruction of the coronary arteries by arteriosclerosis.

The observations made as regards the relative frequency of the various forms of organic heart disease are, therefore, not essentially different from those of observers elsewhere; except that there seems to be an unusual proportion amongst our cases of disease of the myocardium. This is directly attributable to the great frequency of arterial disease amongst the class of patients we meet in our clinic, a fact which accounts also, I may say in passing, for the remarkable frequency with which we observe aneurism of the aortic arch in San Francisco—a fact to which I venture to call attention at this time, without adducing statistics to corroborate the statement.

III. FACTORS INFLUENCING THE FREQUENCY.

(*A*) *Rheumatism.*—As one would expect, articular rheumatism has played a prominent part in the history of our cases who came with heart disease. Forty-nine in all had either had rheumatism at some time in their previous history, or were suffering from a subacute attack at the time of their visit. In a number of these there was the usual history of frequently recurring attacks; in others simply a history of one severe illness with a few or many joints involved. It is interesting to note the relation of rheumatism to the form of lesion present. Out of nine cases diagnosed as mitral stenosis, six had a positive history of rheumatism, usually of recurring attacks. Of the sixty-five cases of mitral regurgitation, thirty-three had an antecedent history of rheumatism. On the other hand, out of twenty-one cases of aortic regurgitation, only five had an antecedent history of rheumatism and out of the forty cases of myocarditis, only seven had ever suffered previously from rheumatism. Thus it would appear that while in San Francisco, as elsewhere, the acute infectious disease called rheumatism frequently leads to organic disease of the heart, it is the mitral valve that is most often left incapaciated, while the aortic much more frequently escapes and the myocardium suffers least frequently of all.

(*B*) *Arteriosclerosis.*—This is naturally the second great factor. It has been found present in practically all of the cases diagnosed as myocarditis, and in a large proportion of the cases of aortic regurgitation. It is recognized as a matter of course that arteriosclerosis may be manifestly present in peripheral vessels and yet, perhaps, play no part in the condition of the heart; and, on the other hand, that before changes can be discovered in peripheral vessels, advanced change may already have occurred in the coronary arteries and in the aortic arch. But two points are absolutely certain:

First.—The extreme frequency with which we observe arteriosclerosis in the clinic, as shown by thickened and hardened walls in the palpable peripheral vessels.

Second.—The fact that out of the eighteen cases of myocarditis which were found among Dr. Orphüls' autopsies, fourteen showed a greater or less degree of obstruction of the coronaries by arteriosclerosis.

Whatever the reason for it may be, degeneration of vessels is, without doubt, one of the most conspicuous pathologic conditions with which we meet in the medical clinic from which these records are taken.

(*C*) *Nationality.*—It is a significant fact that, out of the 135 cases, only forty-eight were of native stock—that is, born in the United States. What bearing this may have on the incidence of heart disease is not readily explained, but the fact remains that nearly two-thirds of our cases were of foreign birth. Nothing shows better than these statistics of a medical clinic how cosmopolitan is the population of San Francisco. Among the cases collected there were patients from Austria, Ireland, Germany, Sweden, Denmark, Italy, England, Canada, Poland, France, Switzerland, Finland, Roumania, Russia, West Indies, Belgium, Portugal, Norway, Hungary; while in the clinic, though not represented among the heart cases, we have frequent visits from Chinese and Japanese. Returning to the relation which foreign birth may bear to heart disease, the only explanation I can offer, based on my observation of these people as they come to us, is that the foreigners are afflicted not only by poverty, as all visitors at a free clinic must necessarily be, but are almost invariably filthy in their habits, addicted to the use of alcohol and tobacco, and ignorant of all proper conception of how they should live, of how they should eat, drink, work and house themselves in order to maintain health.

(*D*) *Occupation.*—It can be safely asserted that among our cases, no one occupation has predisposed more than another to heart disease; for almost every conceivable form of labor is represented among the 135 collected here. But it must be borne in mind, on the other hand, that only the laboring class are represented in this group, and that no information whatever is given by a public clinic as to the frequency of heart disease among the prosperous, whose occupation is entirely different from that of the class from whom these cases come. It is not likely that the occupation itself has so much to do with the incidence of heart disease as has the association of any hard work with bad hygienic habits, poor food, overindulgence in alcohol and other forms of dissipation. While I have no definite statistics to offer as to the frequency of heart disease in private practice, my impression is that cases are not so frequently met with among the well-to-do as among the poor; and not so frequently among those who earn their living by their brains as among those who have to earn their daily bread by the work of their hands. Nevertheless, the rich, the idle, and the brain workers have diseases of their own, even if they apparently escape their share of heart disease.

(*E*) *Sex.*—Only thirty-five of the cases were women, while one hundred were men. While the fact that the number of males in the group so largely exceeds the females may be partly explained by the fact that the number of men presenting themselves for treatment at a dispensary clinic is always greater than the number of women, still there is no such disproportion in the attendance as there is in the number of these cases of heart disease; and the inference seems justifiable that in San Francisco, at least, heart disease is more common among men than among women.

(*F*) *Age.*—As is well known, there is no time of life exempt from heart disease, and our cases were found distributed among individuals of every age from 12 as a minimum to 81 as a maximum. During the various decades they occurred as follows: 12 to 20, nine; 20 to 30, sixteen; 30 to 40, seventeen; 40 to 50, thirty-two; 50 to 60, twenty-nine; 60 to 70, twenty-six; 70 to 80, six. Of the nine cases under 20, seven were mitral stenosis and two mitral regurgitation; of the sixteen between 20 and 30, ten were mitral regurgitation, two were aortic regurgitation, two were mitral stenosis and two only were diagnosed as myocarditis. Of the seventeen cases between 30 and 40, ten were mitral regurgitation, five were aortic regurgitation and only two were myocarditis. Thus it will be seen that all of the cases of mitral stenosis occurred under the age of 30 and the great majority under 20; while, on the other hand, out of the forty cases in all of myocarditis, only four were observed in patients under 40. The mitral regurgitations were found quite evenly distributed throughout all the decades, almost the same number for each ten years up to 70; which would seem to indicate not only that mitral regurgitation has no predilection for any particular time of life, but also that its prognosis is better than that of the other valvular lesions. Of the aortic regurgitations only one-third occurred under the age of 40, and two-thirds between the ages of 40 and 60; which would seem to indicate the part played in the production of this lesion by arteriosclerosis. This, indeed, is the most significant fact that stands out above all others in these records—the predominance of arterial disease; and advanced years in themselves lead to heart disease only as they first lead to changes in the coronary arteries, or in the aortic arch and the valves that guard the orifice of this great vessel.

CONCLUSIONS.

1. Heart disease is a common ailment in San Francisco, as it is in all large cities.

2. Among valvular troubles, the form most commonly met with is mitral regurgitation; second comes aortic regurgitation, and, third, mitral stenosis, while aortic stenosis is undoubtedly a rare affection.

3. Myocardial disease is frequently found. The factors in its incidence are those commonly supposed to cause arteriosclerosis; and the latter condition is even more often seen than myocarditis itself.

DISCUSSION.

Dr. W. Ophüls, San Francisco, said that the number of cases examined at postmortem was rather small, and a comparatively small number for statistical purposes. He was struck with the large number of septic endocarditis cases. Nearly all of these cases were diagnosticated clinically as cases of chronic rheumatism with heart lesions and Dr. Ophüls thought that the cases of rheumatism, so-called, that lead to severe lesions of the heart valves were, in the large majority, more properly speaking cases of sepsis. How frequently these heart lesions follow in instances of rheumatism, if we want to acknowledge the existence of such a condition not due to an infection with ordinary septic bacteria, is another matter. It can not occur very frequently. So that it is presumable in the course of a disease with the clinical picture of polyarticular rheumatism, but with severe lesions of the heart valves, that the condition really is a septic one.

Dr. James J. Walsh, New York, thought, with regard to the origin of rheumatic endocarditis, that there is a definite change of opinion among medical men about to come that is worth while noting. At the present time it is generally accepted that simple acute articular rheumatism is very frequently followed by valvular heart disease; on the other hand, it is generally acknowledged that simple, articular rheumatism *does not leave any marked evidence of disease in* the joints. One of the pathognomonic signs of acute articular rheumatism is that it leaves no mark after it. Whenever a chronic arthritic condition remains there is more than a suspicion that the original disease was not simple acute rheumatism, but either arthritis deformans or acute arthritis, due to some other infection beside that which produces true rheumatism. Affections of the heart valves are extremely common in septic conditions of all kinds. There is scarcely any form of microbe that gets into the circulation but will not produce an affection of these delicate structures. The heart valves are, after all, joints in the tissues, that is, they represent portions of the tissues covered by serous membranes in order that they may move over one another without friction and without adhesion. Since ordinary acute rheumatism when uncomplicated does not leave any mark on the other joints in the body, it seems probable that it also does not leave any mark on the heart; at least, not nearly in the large proportion usually stated. When there is a so-called rheumatic endocarditis it is probable that there has been some secondary affection complicating the simple rheumatic arthritis. This point of view can not but be helpful for diagnosis and prognosis.

Dr. Charles Rollins Grandy, Norfolk, Va., reported that his experience with heart disease among the negroes has been rather different. Heart disease among the negroes is very common, while acute rheumatism is seldom seen. The negroes have various other diseases which they call chronic rheumatism, but which are probably nervous affections, etc. Many cases of aortic valve murmurs or even double valve murmurs occur. There may be an aortic direct murmur, although at autopsy there will not be found any closing of the valves. Men who do heavy work have dilated hearts, hypertrophied hearts, with a leak at the mitral or other valves; these are some of the cases that come to Dr. Grandy for treatment in Norfolk. In probably the majority of them there was a strain of the valve. They were young men and Dr. Grandy was able to note the blood pressure and the arteriosclerosis.

ACUTE DIFFUSE SUPPURATIVE PERITONITIS.*

SIMON J. YOUNG, M.D.
VALPARAISO, INDIANA.

Many men of many minds have written about peritonitis. The theme is old but not exhausted—not while surgeons are reporting 100 per cent. of mortality. I shall confine myself to a discussion of the acute diffuse suppurative form of the disease, and will consider especially the treatment. For etiology and classification I will refer to the publications of Senn[1] and Bayard Holmes,[2] whose monographs are exhaustive and scholarly.

In the study of this subject my purpose has been to secure for comparison the experiences, methods and opinions of a considerable number of surgeons. This I have undertaken by correspondence and by some references to literature. Fifty letters were addressed to surgeons in various sections of the country, information being sought on lines suggested by the following questions:

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* Read before the Indiana State Medical Association, June 8, 1905.

1. Senn.: Journal A. M. A., Sept. 4, 1897.
2. Holmes: Illinois Med. Jour., 1904, vi, 499-515.

1. Do you make it a rule to operate on acute diffuse suppurative peritonitis?
2. If not, what are the contraindications?
3. On how many cases have you operated, and with what mortality?
4. What is your method of operation and treatment?
5. Do you ever refuse to operate? If so, when and why?

Free discussion was invited. Twenty-five answered—some in detail. A dozen sent courteous regrets. From the remainder no answers were received. Many of the letters received were scholarly and instructive. I wish I might publish them in full, but that is manifestly inexpedient. I, therefore, give you briefs and excerpts as follows:

Van Buren Knott, Sioux City, was among those who gave detailed information as to his methods of treatment. He always operates unless patient is moribund. He has kept records only since 1902. Since that date he has operated on 19 cases, with 17 recoveries and 2 deaths. He employs the median incision, and at once repairs any leak or diseased part that may exist. Through a two-inch incision above the symphysis he places a tube one and one-half inches in diameter, carrying a gauze wick to the bottom of the pelvis. In females a similar tube without the gauze wick is placed in the cul-de-sac. Gallons of hot salt solution are used to flush the abdomen, enough of which is left in to fill the cavity entirely. With an additional drainage tube in the pelvis similar to the first, but without the wick, the patient is raised to the Fowler attitude while yet on the table, transferred to the bed and kept in this position. Through this plain tube in the pelvis he pumps out, every two hours, such excess of fluids as are not carried off by the wick. This is done for 24 hours. He thinks by leaving in the abdominal cavity a large amount of the saline solution a strong current is established toward the lower pelvis.

D. N. Eisendrath, Chicago, operates on all cases where diagnosis has been made during the first 24 to 72 hours. As contraindications, he mentions extreme sepsis as shown by a pulse of 180 to 200, excessive distention of the abdomen which denotes a complete septic paralysis of the gut, as well as constant vomiting. He thinks these latter cases, however, are those in which a diagnosis has not been made until the fourth, fifth or sixth day after the onset of perforation. Prior to his adoption of the Fowler position, he reports 7 cases with a mortality of 100 *per cent.* Since using the Fowler position he has had 3 cases, all of which recovered. He washes the abdominal cavity with three or four gallons of hot salt solution and inserts a Mikulicz (or umbrella) drain of plain gauze. Where the drain goes through the skin it is surrounded with long strips of loosely folded gauze, which is frequently changed within the first few days after the operation.

Joseph R. and Thomas B. Eastman, Indianapolis, make it a rule to operate on all cases unless moribund. They report 7 cases with 1 death. Their method is celiotomy, lavage, very gentle manipulation of the intestines in search for abscess or perforation, and tube drainage from bottom of pelvis, with patient in Fowler's position.

George Tully Vaughan, Washington, D. C., reports 16 cases, with 4 recoveries and 12 deaths. He uses irrigation and drainage and refuses to operate only when patient is moribund.

John A. Wyeth, New York, does not operate on all cases. In cases of seemingly diffuse mild peritonitis, progressing slowly from the first indications of the disease, he adopts the Fowler position, gives calomel and flushes the colon from below with salines. He reports two cases within two years of general diffuse peritonitis in children which had developed in connection with colitis due to intestinal indigestion, and both were relieved, without operation, by this method. Rapidly developing general peritonitis, from symptoms of gangrene of the appendix or perforation, he says, require operation, and the seat of infection should be sought out and removed. He flushes with sterile water 100 to 105 degrees, with a long tube, beginning above the liver, spleen and stomach, and underneath these organs, and around on either side, carefully, under high pressure, using volumes of water until the fluid comes out clear. In women he opens the cul-de-sac and drains, and in men through an opening above the pubes he puts in a pelvic pack.

Roswell Park is among those who take a pessimistic view of operative treatment. He says: "I have had such a small measure of success in attacking diffuse suppurative peritonitis that I avoid operation on it if I possibly can. I feel that the contraindication is the fact of its being suppurative and diffuse."

J. F. Binnie, Kansas City, says that operation is the only logical method of treatment, but that he has seen more cases recover unexpectedly without operation than with. He is convinced that almost all cases where the abdomen is much distended and diffuse suppuration is present will die, no matter what the treatment.

James E. Moore, Minneapolis, and John P. Roberts, Philadelphia, also incline to this view.

Parker Syms, Philadelphia, makes it a rule to operate on diffuse cases. He says: "I believe there should be a careful distinction made between diffuse and general acute suppurative peritonitis. I believe that general acute suppurative peritonitis is fatal in 100 per cent. of cases, no matter what plan of treatment is employed. I believe diffuse peritonitis should give satisfactory results if properly operated on. Of course, there will be a pretty high mortality rate. My method is removal of the original focus, sponging out of the sero-pus and careful drainage with gauze and rubber tissue. I use peroxid of hydrogen locally. I do not believe in flushing. In the routine after operation I employ the physiologic rest to the stomach and alimentary canal as prescribed by Ochsner. I often prescribe the upright position suggested by Fowler."

L. L. McArthur, Chicago, operates except in the moribund state. He reports 100 cases, out of which he saved 23. He uses irrigation, pelvic drainage and the Fowler position.

This plan of treatment is endorsed by Robert G. LeConte, B. F. Curtis and De Forest Willard, Philadelphia; Chas. A. Powers, Denver, and H. L. Burrell, Boston.

B. F. Curtis, Philadelphia, also recommends the ice coil and opium.

H. L. Burrell, Boston, reports "at least 100 cases," and recalls "a few instances in which recovery has occurred." Occasionally when in doubt as to how diffuse the peritonitis is, he uses Ochsner's treatment for a few days.

Nicholas Senn, Chicago, has no fixed rule for operating. He selects his cases. He claims as contraindications, subnormal temperature, pulse 150 or more and great abdominal distension. He could not state the number of cases on which he had operated. His method consists of free drainage, flushing, and, if necessary, multiple incisions.

W. J. Mayo, Rochester, Minn., reports about 30 cases, with at least 50 per cent. of recoveries. He advocates quick abdominal incision and pelvic drainage with the patient kept in a *sitting* position for four or five days. Contraindications are general sepsis, leaky skin, quick pulse and cyanosis.

R. C. Coffey, Portland, Ore., makes it a rule to operate on all cases, except in extreme shock, or in which the condition has existed for several days and the patient is improving or is growing no worse. His treatment consists chiefly in carefully applied capillary drainage in sufficient quantities absolutely to dry the abdominal cavity within an hour or less time. For this purpose he has used more than 100 drains in wicks the size of a finger in extreme cases. In addition to drainage, he has great faith in anti-streptococcic serum or streptolytic serum. He commends Ochsner's method of starvation and stomach washing in these cases.

C. H. Mayo, Rochester, Minn., operates if due to rupture of viscera; also in the earlier stage of ruptured abscess if patient is reacting. He does not operate if patient is in the second period of subnormal temperature following the shock of rupture. In case of a ruptured viscus, the source is found and cared for, foreign material removed by irrigation, large females may be partly explained by the fact that the number of men presenting themselves for treatment at a dispensary clinic is always greater than the number of women, still there is no such disproportion in the attendance as there is in the number of these cases of heart disease; and the inference seems justifiable that in San Francisco, at least, heart disease is more common among men than among women.

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5. Do you ever refuse to operate? If so, when and why?

Free discussion was invited. Twenty-five answered—some in detail. A dozen sent courteous regrets. From the remainder no answers were received. Many of the letters received were scholarly and instructive. I wish I might publish them in full, but that is manifestly inexpedient. I, therefore, give you briefs and excerpts as follows:

Van Buren Knott, Sioux City, was among those who gave detailed information as to his methods of treatment. He always operates unless patient is moribund. He has kept records only since 1902. Since that date he has operated on 19 cases, with 17 recoveries and 2 deaths. He employs the median incision, and at once repairs any leak or diseased part that may exist. Through a two-inch incision above the symphysis he places a tube one and one-half inches in diameter, carrying a gauze wick to the bottom of the pelvis. In females a similar tube without the gauze wick is placed in the cul-de-sac. Gallons of hot salt solution are used to flush the abdomen, enough of which is left in to fill the cavity entirely. With an additional drainage tube in the pelvis similar to the first, but without the wick, the patient is raised to the Fowler attitude while yet on the table, transferred to the bed and kept in this position. Through this plain tube in the pelvis he pumps out, every two hours, such excess of fluids as are not carried off by the wick. This is done for 24 hours. He thinks by leaving in the abdominal cavity a large amount of the saline solution a strong current is established toward the lower pelvis.

D. N. Eisendrath, Chicago, operates on all cases where diagnosis has been made during the first 24 to 72 hours. As contraindications, he mentions extreme sepsis as shown by a pulse of 180 to 200, excessive distention of the abdomen which denotes a complete septic paralysis of the gut, as well as constant vomiting. He thinks these latter cases, however, are those in which a diagnosis has not been made until the fourth, fifth or sixth day after the onset of perforation. Prior to his adoption of the Fowler position, he reports 7 cases with a mortality of 100 per cent. Since using the Fowler position he has had 3 cases, all of which recovered. He washes the abdominal cavity with three or four gallons of hot salt solution and inserts a Mikulicz (or umbrella) drain of plain gauze. Where the drain goes through the skin it is surrounded with long strips of loosely folded gauze, which is frequently changed within the first few days after the operation.

Joseph R. and Thomas B. Eastman, Indianapolis, make it a rule to operate on all cases unless moribund. They report 7 cases with 1 death. Their method is celiotomy, lavage, very gentle manipulation of the intestines in search for abscess or perforation, and tube drainage from bottom of pelvis, with patient in Fowler's position.

George Tully Vaughan, Washington, D. C., reports 16 cases, with 4 recoveries and 12 deaths. He uses irrigation and drainage and refuses to operate only when patient is moribund.

John A. Wyeth, New York, does not operate on all cases. In cases of seemingly diffuse mild peritonitis, progressing slowly from the first indications of the disease, he adopts the Fowler position, gives calomel and flushes the colon from below with salines. He reports two cases within two years of general diffuse peritonitis in children which had developed in connection with colitis due to intestinal indigestion, and both were relieved, without operation, by this method. Rapidly developing general peritonitis, from symptoms of gangrene of the appendix or perforation, he says, require operation, and the seat of infection should be sought out and removed. He flushes with sterile water, 100 to 105 degrees, with a long tube, beginning above the liver, spleen and stomach, and underneath these organs, and around on either side, carefully, under high pressure, using volumes of water until the fluid comes out clear. In women he opens the cul-de-sac and drains, and in men through an opening above the pubes he puts in a pelvic pack.

Roswell Park is among those who take a pessimistic view of operative treatment. He says: "I have had such a small measure of success in attacking diffuse suppurative peritonitis that I avoid operation on it if I possibly can. I feel that the contraindication is the fact of its being suppurative and diffuse."

J. F. Binnie, Kansas City, says that operation is the only logical method of treatment, but that he has seen more cases recover unexpectedly without operation than with. He is convinced that almost all cases where the abdomen is much distended and diffuse suppuration is present will die, no matter what the treatment.

James E. Moore, Minneapolis, and John P. Roberts, Philadelphia, also incline to this view.

Parker Syms, Philadelphia, makes it a rule to operate on diffuse cases. He says: "I believe there should be a careful distinction made between diffuse and general acute suppurative peritonitis. I believe that general acute suppurative peritonitis is fatal in 100 per cent. of cases, no matter what plan of treatment is employed. I believe diffuse peritonitis should give satisfactory results if properly operated on. Of course, there will be a pretty high mortality rate. My method is removal of the original focus, sponging out of the sero-pus and careful drainage with gauze and rubber tissue. I use peroxid of hydrogen locally. I do not believe in flushing. In the routine after operation I employ the physiologic rest to the stomach and alimentary canal as prescribed by Ochsner. I often prescribe the upright position suggested by Fowler."

L. L. McArthur, Chicago, operates except in the moribund state. He reports 100 cases, out of which he saved 23. He uses irrigation, pelvic drainage and the Fowler position.

This plan of treatment is endorsed by Robert G. LeConte, B. F. Curtis and De Forest Willard, Philadelphia; Chas. A. Powers, Denver, and H. L. Burrell, Boston.

B. F. Curtis, Philadelphia, also recommends the ice coil and opium.

H. L. Burrell, Boston, reports "at least 100 cases," and recalls "a few instances in which recovery has occurred." Occasionally when in doubt as to how diffuse the peritonitis is, he uses Ochsner's treatment for a few days.

Nicholas Senn, Chicago, has no fixed rule for operating. He selects his cases. He claims as contraindications, subnormal temperature, pulse 150 or more and great abdominal distension. He could not state the number of cases on which he had operated. His method consists of free drainage, flushing, and, if necessary, multiple incisions.

W. J. Mayo, Rochester, Minn., reports about 30 cases, with at least 50 per cent. of recoveries. He advocates quick abdominal incision and pelvic drainage with the patient kept in a sitting position for four or five days. Contraindications are general sepsis, leaky skin, quick pulse and cyanosis.

R. C. Coffey, Portland, Ore., makes it a rule to operate on all cases, except in extreme shock, or in which the condition has existed for several days and the patient is improving or is growing no worse. His treatment consists chiefly in carefully applied capillary drainage in sufficient quantities absolutely to dry the abdominal cavity within an hour or less time. For this purpose he has used more than 100 drains in wicks the size of a finger in extreme cases. In addition to drainage, he has great faith in anti-streptococcic serum or streptolytic serum. He commends Ochsner's method of starvation and stomach washing in these cases.

C. H. Mayo, Rochester, Minn., operates if due to rupture of viscera; also in the earlier stage of ruptured abscess if patient is reacting. He does not operate if patient is in the second period of subnormal temperature following the shock of rupture. In case of a ruptured viscus, the source is found and cared for, foreign material removed by irrigation, large glass drain in the pelvis, patient in sitting posture. If due to ruptured abscess, source of abscess is not sought for unless condition of patient is fair. No irrigation of pus derived from tissue or blood. He gives salines by rectum and occasionally subcutaneously.

John Young Brown, St. Louis, reports about 50 cases with a mortality of about 15 per cent. He operates on all cases, unless suffering from profuse general sepsis. He deals first with the primary source of infection, then "stabs" above the pubes, puts a large glass tube in the cul-de-sac and places patient in an exaggerated Fowler position. He has stopped irrigating and handles the viscera as little as possible. He believes that the hitherto high mortality rate has been largely due to the attempts of surgeons to do too much in cases of widespread peritoneal infection.

J. B. Murphy, Chicago, has a series of 24 operations, with only 1 death. He protests against irrigation and handling of viscera. His method consists of tube drainage in pelvis, Fowler position, proctoclyses, and antistreptococcic serum.

Thomas B. Noble, Indianapolis, employs a similar technic. He says that one can never tell what case is hopeless. He refuses to operate only when patient is dying and thinks then under local anesthesia some may be saved. He reports 5 cases operated on with only 1 death.

Byron Robinson, Chicago, also employs incision and drainage, with incision into the colon for relief of distending gases. He says: "I operate on any peritonitis which does not appear to check by anatomic and physiologic rest."

Now let us analyze these replies:

To my first question seventeen said "Yes." Seven gave affirmative replies, with qualifications. One avoids operation if possible.

Question 2 developed the statement by fourteen writers that no contraindication to operation should be considered except the moribund state. Nine gave symptoms which virtually imply the same condition, while two did not answer the question.

In answer to Question 3, statistics were supplied by twelve, a few of which were estimated. There were reported 374 cases, with a total of 232 deaths. This gives a total mortality of a fraction over 62 per cent.; a high death rate to be sure, but it does not bear out the opinions that all will die, no matter what treatment is employed.

My fourth question pertained to methods, and it developed that 15 were in favor of irrigation, while 10 opposed it. The Fowler position was advocated by a total of 17. It was not mentioned by the others.

The answers to my fifth question tallied very closely with replies to my second.

In going over the methods of treatment we find that operation is advocated in nearly every instance as the only rational procedure. The technic, however, varies considerably; prognostic opinions likewise. We find here the optimist, who believes that nearly every case ought to be saved. We are not without the pessimist, who thinks all will die. And, as usual, we have intervening shades of opinion. Is there anything in these reports to account for such variance in belief? Let us question them still more critically.

Points on which there is no contention are: Free drainage and the Fowler position. True, the methods of drainage are somewhat at variance, but all are primarily agreed on its use, and all place it in the pelvis, and in other regions as indicated. Irrigation is favored by the majority, but those who use it seem to have the highest mortality. They report, altogether, 252 cases with 199 deaths. This is a mortality of 79 per cent. Where irrigation was not employed 92 cases were reported, with a total of 18 deaths—a mortality of less than 20 per cent. This looks significant.

I am aware that there is liability to error in these figures. Other factors may have figured in the cases to some extent. Still, the difference in death rate is so striking that it challenges our attention, and needs an explanation. I know that some operators report success with irrigation. Levings[3] recently reported 10 cases operated on in 10 months, with 9 recoveries, and in each case he flushed the abdomen with acetone solution, 1 to 10,000. Note, however, that he applied it *through the drainage tubes,* without handling the viscera.

Among English surgeons I find C. A. Ballance[3] warning against the practice of irrigation and handling the viscera. He thinks the heavy death rate in the past has been due to these methods. Also, in the Erasmus Wilson Lectures on peritonitis, Dudgeon and Sargeant,[5] who investigated a series of cases at St. Thomas' Hospital, report 119 cases of diffuse peritonitis resulting from perforations in appendicitis. Of this number 100 were treated in the ordinary way by lavage with sterile water or salt solution; 80 of the patients died; the remaining 19 were sponged locally, and drained without flushing, with 10 deaths. This gives 80 and 53 per cent., respectively, for the two methods. None of the cases were selected, save that a few of the latter were given this conservative treatment because they seemed hopeless. The writers unhesitatingly endorse the method which gave the most satisfactory results.

There is another element in these reports which undoubtedly modifies statistics. I refer to the laxity in the use of the term "general" peritonitis. Senn directed attention to this in 1897. One or two of my correspondents have emphasized it, and I find a note of warning in the excellent lectures above referred to. Every case of peritonitis at first is local. When it is not limited by adhesions these writers[5] prefer to call it "diffuse," the term "general," or "universal," being reserved for cases in which the entire peritoneum is involved. They claim, also, that no accurate opinion can be formed at the time of operation, as to whether a case is diffuse or general.

If it be true that the method which omits flushing and handling and sponging gives the best results, as it seems to do, what are the reasons therefore? Let us examine the processes by which nature combats the infection. They are:

1. A serous exudate.
2. A fibrinous exudate.
3. Hyperleucocytosis.
4. Route of absorption.
5. Anatomic and physiologic rest.

1. The serous exudate serves to dilute the toxins of the infections and perhaps has a tendency to neutralize them with antitoxins. We may assist in this dilution by flushing, but there is a better way. Water introduced slowly by rectum will accomplish the purpose without traumatic effect on the peritoneum. It also favors elimination. Murphy[6] says eighteen pints of salt solution may be introduced into the rectum in twenty-four hours, and retained if introduced slowly under low pressure (one foot elevation). This I consider a most important element in treatment.

2. We all know something of the benefit to be derived from a fibrinous exudate. It tends to wall off the infection and to change a diffuse into a circumscribed inflammation. It helps to protect the endothelial coat

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[3] Levings: Clin. Review, Chicago, 1904-5, xxi, 161-170.
[4] Ballance: Lancet, Lond., 1904, ii, 1195-1200.
[5] Dudgeon and Sargeant: Lancet, Lond., vol. i, 1905, 617-625.
[6] Murphy: Prac. Med. Series, 1903, November, 282.

from the destructive effect of toxins. A blistered or denuded peritoneum is a distinct menace to the life of the patient for the reason that it allows absorption to take place directly into the blood stream. Dudgeon and Sargeant[6] observed that the *Staphylococcus albus* was the first organism to appear in peritonitis and the last one to disappear. It was always associated, when present, with a fibrinous deposit. They believe it has an influence on the formation of fibrin, as well as with the attraction of leucocytes into the field. The leucocytes produce a turbid appearance in the fluid present, and the surgeon has been trying all along to remove this creamy substance, which really is nature's bodyguard, fighting the infection. The point is, let the fibrinous exudate alone. How differently from the recommendation made to the French Surgical Congress by Demons[7] a few years ago, viz., to scrape the entire surface of the intestine.

3. Hyperleucocytosis, generally, is an expression of the natural resisting power of the individual, as compared to the amount and character of toxemia present. It is favored by such measures as conserve the patient's energy, and the fact that leucocytes are present in the exudate in large numbers is no indication for flushing. You can not remove pus from the peritoneal cavity without breaking up the fibrinous deposit, uprooting the endothelial cells and producing multiple atria of infection. Pus goes in the line of least resistance. Remove the tension, give it an outlet and leave the rest to nature.

4. Robinson[8] and other observers have demonstrated that the place of greatest absorption is the diaphragmatic pleura; also that absorption takes place primarily through the lymphatics, chiefly in the direction of the thorax. Muscatello, in his experiments on dogs, showed that the upright position retarded but did not prevent absorption by this route, and, furthermore, there was no evidence of absorption by any other channels. The abdominal organs after five and one-half hours contained none of the reagent used in the experiment. This explains the efficacy of the Fowler position after operation. Absorption is delayed and time is gained for the patient, and time is an important element in the fight.

5. Nature enforces rest by inflicting the patient with pain. The normal peritoneum is practically without pain sensation. When it is inflamed the pain is terrific. As a result the diaphragm and other muscles are fixed; the parts are placed under enforced rest. Robinson[8] says that the diaphragm acts as a force pump, sucking up the fluids from the peritoneum during respiration, and forcing them onward through the lymphatics. If this be true, rest is greatly to be desired. It also tends to limit the spread of infection throughout the peritoneal cavity, for it must be remembered that diffuse inflammation is not of necessity general.

To sum up, I believe the indications for treatment are:

1. Early operation—and it must be remembered that this implies an early diagnosis. Do not wait for shock, which is a symptom of overwhelming infection. Learn to recognize the early symptoms as stated by Murphy:[9] "Pain, nausea and vomiting, localized tenderness, circumscribed flatness on piano percussion, elevation of temperature and hyperleucocytosis, in the order named." I repeat it, operate early.

2. Method—simple incision, with simple drainage, placed in pelvis and such other fossæ as seem to require drainage. Perforations should be closed, and appendix removed if it be the offender, provided these things can be done without too much handling of viscera.

3. Fowler position to retard lymphatic absorption.

4. Physiologic salt solution by rectum, one and one-half pints every two to four hours for twenty-four to forty-eight hours.

5. Antistreptococcic serum in suitable cases in hope to combat the effect of toxins absorbed.

TREATMENT OF CONGENITAL DISLOCATION OF THE HIP.

WITH REPORT AND EXHIBITION OF CASES.*

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It is not my intention to give an elaborate paper on the treatment of this disease, but simply to go over briefly the methods used in these cases which are reported. The fact that it is necessary to wait for many months, or even years, before the final result is known, and the further fact that only a few years ago this disease was relegated to the surgical waste basket as being incurable, places our knowledge of the result of treatment of it at the present time in a more or less uncertain condition.

Many objections have been raised against the manipulative method as practiced by Lorenz and his followers. Serious complications, such as paralysis, fracture of the bones, rupture of the blood vessels, gangrene, and loss of limb, have been too frequent; and the final results are not by any means perfect. Ankylosis may occur, complete relapse is comparatively frequent, and anterior transposition is so common as to be almost the rule.

The operative technic here followed has been that practically as given by Royal Whitman[1] and J. Jackson Clarke.[2] The tissues on the inner side of and anterior and posterior to the joint are, in turn, stretched until sufficient relaxation for reduction is produced. This result has usually been accomplished when the trochanter can be drawn down to Nélaton's line. Reduction is attempted by forced abduction of the thigh, which is at the same time completely flexed on the abdomen and rotated inward. Either the hand of the operator or a wedge may be used as a fulcrum behind the trochanter. After reduction the anterior fibers of the capsule are stretched and the plaster cast applied. Only in an easy case, however, would the operation be completed at one time.

The structures with which we have to deal in these operations are frail, while the leverage is great; consequently special care is necessary to avoid injury. After a moderate amount of manipulation of the tissues and a few gentle attempts at reduction, the hip is placed in a cast in a position of abduction. After two or three weeks, the cast is removed and another attempt made at reduction. At this time, the adductors will be found well relaxed, and most of the manipulations will be required on the posterior and anterior muscles, especially the tensor fascia femoris. The same method, however, as previously practiced, is repeated again at this time. If, after three or four attempts, reduction can not be accomplished, it is undoubtedly wise to resort to open incision. When reduction has been secured, the cast is changed about once in two months, or more frequently if much soiled or broken, and at the time of such a change a radiograph is taken, and the hip gently moved in different directions, avoiding adduction. This gentle, repeated manipulation should eliminate almost completely such complications as result from fracture of bones and laceration of the soft tissues. The frequent dressing, with *x*-ray picture, keep the surgeon posted as to the progress of the case, and the tissues about the joint are also kept in better condition. On account of the frequency of relapse, treatment in the cast, even in favorable cases, is continued for at least one year after final reduction. The following cases are reported:

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[7] Demons: Trans. French Surg. Cong., 1890.

[8] Robinson: "The Peritoneum." Part 1, 288.

[9] Murphy: Journal A. M. A., 1903, April 11.

* Read in the Section on Surgery and Anatomy of the American Medical Association, at the Fifty-sixth Annual Session, July, 1905.

[1] Orthopedic Surgery, 1903.

[2] The Practitioner, March, 1903.

Case 1.—R. R., female, born in February, 1901, began to walk in August, 1902, when the limp was first noticed by her parents. In April, 1903, the child had empyema, and after recovery from this the limp was more noticeable. She came under my observation in October, 1903, with congenital backward dislocation of the right hip. The shortening was three-quarters of an inch. My friend, Dr. Joseph C. Bloodgood, of Baltimore, who has given me much valuable advice and assistance with all these patients, had charge of this one, and, with my assistance, manipulated the hip for twenty minutes without securing reduction. A cast was applied with the limb in abduction. This patient was treated until the present time under the direction of Dr. Bloodgood, and it was at his suggestion that the repeated gentle manipulative method was used. In January I manipulated this hip the second time under anesthesia and very easily secured apparent reduction. The femoral head could be plainly felt anteriorly, and the hamstring tendons were contracted so that it was impossible to straighten the leg. The *x*-ray, however, cast a gloom over my hopes by portraying the fact that the bone was really in a position of anterior transposition, where it has since remained. The cast was changed about once in two months until January, 1905, when it was replaced by an external hip splint, holding the leg in slight abduction. In July, 1904, the cast was removed and the patient placed in bed, with slight extension, for one week. She is now walking, without any support, a portion of the time, but with a moderate limp. This limp may be partially habit, as the splint is still worn most of the time. There is free movement, with about three-eighths of an inch shortening.

Case 2.—F. C., female, born in September, 1899, was referred to me by Dr. L. R. Dawson in June, 1903, with the diagnosis of double backward congenital dislocation of the hips. In October, 1903, Dr. Bloodgood assisted me in manipulation of her left hip, and, although the reduction was not accomplished, a cast was applied with the limb in abduction. In January both hips were manipulated, the left giving clinical signs of reduction, while the right was still unreduced. Early in February an anesthetic was given, and the left was found in its former position of backward dislocation, and I was unable to replace it, although apparently the muscles were thoroughly relaxed. At this time the right hip was reduced with audible thud and jerk and gave other clinical signs of reduction. The *x*-ray showed that it was in perfect anatomic position, and it has remained so until the present time. The cast was applied with both thighs in abduction, and again in March an anesthetic was administered and the left hip again apparently reduced after great difficulty. The cast was removed, however, two months later, and it was again found in a dorsal position, and three or four efforts after this failed to change its location. In October, 1904, after performing tenotomy of the adductors and the tensor fascia femoris, and still failing to accomplish reduction, I operated by open incision, using Lorenz's modification of Hoffa's method. On opening the capsule, practically no fluid was found: the head of the bone was eroded, the neck was at right angles to the shaft, the ligamentum teres absent, and the capsule contracted at the head of the femur. It was impossible to find the joint cavity until a more careful examination revealed the fact that the capsule was stretched across the acetabular cavity and firmly adherent around its rim. The capsule was freed by dissection from its adhesions to the acetabulum, which was found to be very shallow and contained little or no débris. The bone was replaced and one or two catgut stitches placed in the capsule and the external wound closed without drainage. The wound united, apparently without infection, although the union was slightly delayed in one part on account of the stitches not being near together, causing a small superficial granulating surface. One month after this operation, the head of the bone was again found in a dorsal position, but was very easily reduced. It was then put up with increased abduction and has since remained in place, while the abduction has been gradually decreased.

In February, 1905, a radiograph showed an apparent separation of the lower part of the left sacroiliac joint, and also a change in the ilium opposite the acetabulum, which looked very much like a fracture, but was not so considered by Dr. C. H. Thomson, who has taken most of these radiographs, although he thinks the bone was pushed in a little. This occurred after a manipulation so gentle that the child, without anesthesia, did not cry. The cast was removed in March and the patient kept in bed and the left hip manipulated to try to loosen the adhesions. In May she was allowed to walk, with a brace for slight abduction of the right hip. When the first apparent reduction was obtained by the manipulative method, it was evidently with two folds of the capsule between the head of the bone and the cavity, and there is a question in my mind as to whether these manipulations and the replacing of the bone in that condition did not tend to cause the adhesions of the capsule which were found. At the present time, the right hip has good motion and is apparently in good position. The left hip is in good position, but with limited motion with slight abduction and one-quarter of an inch shortening in comparison with the right. The stiffness will probably disappear, as there is no evidence of bony ankylosis.

Case 3.—L. K., female, was born in October, 1901, and began to walk October, 1903, and was then noticed by the parents to have marked lordosis and a peculiar gait. In June, 1904, the late Dr. F. H. Coe saw her and made a diagnosis of double backward congenital dislocation of the hips and referred her to me for treatment. She was operated on by the manipulative method under anesthesia July 11. The right hip was apparently reduced after manipulation of forty-five minutes. The left one was reduced to anterior transposition after manipulation of about thirty-five minutes. These were comparatively easy to reduce, but still easier to displace. The *x*-ray showed very imperfectly formed acetabular cavities, and also showed that neither reduction was anatomically perfect, but both anterior and a little above. In both cases the head of the femur could be felt in front, and the ham-string tendons showed apparent shortening. Even with this apparently moderate manipulation, there was considerable swelling and ecchymosis about the vulva. September 6, the cast was changed and the left hip again found on the dorsum, and an apparently perfect reduction was obtained, and it still remains in that position. The right was probably in a supracotyloid position and was brought down on a level with the socket, but could only be kept there by bringing the thigh above a right angle with the abdomen with extreme abduction. At the next dressing, and since that time, it has been found in a position of anterior transposition. This patient is still wearing a cast.

Case 4.—C. C., female, aged 17, born in Seattle, after difficult instrumental labor, came under my observation in October, 1903, for congenital dislocation of the left hip. There was shortening of 2¾ inches, which could be reduced to 1¾ inches by traction. Abduction was very much limited and there was marked tilting of the pelvis. Her only symptom was a moderate but characteristic limp, which was lessened by the use of a cork sole. She seemed rather proud of the fact that she could kick higher with this foot than with the other. No treatment was advised. She was married a few weeks later, and no further reports have been obtained.

Case 5.—M. M. O., aged 23, married, came to me in June, 1904, about five months' pregnant. The history was that she tired easily about the hips and had more or less pain in the right. This trouble dated back four years, when, after riding astride a horse, she felt a catch in her right hip. Previous to that time, there was no pain or discomfort, although, she said, she had always walked like a duck. On examination, a double backward congenital dislocation was found, and this diagnosis was verified by the *x*-ray. The nature of her deformity had not been previously discovered. She was delivered October 1, at full term, after ten hours' easy labor. Her version of her present condition is that her right hip tires more easily, is more painful and has increased in size since the birth of her child.

Results in the treatment of this disease necessarily vary greatly with the age and condition of the patient. These eight hips here reported give two anterior transpositions with three anatomically perfect results, one of which was obtained by open incision and resulted in limited motion, which, however, may not be permanent, as the treatment can not be considered complete in any of the five hips treated. The permanent functional results, which are of the greatest importance, will only be known months, or possibly years, later. The three adult hips, in which no treatment was advised, showed a comparatively small amount of disability. The method here used of repeated, gentle manipulation, has the advantage of little danger, and, in case of failure to maintain and accomplish reduction by this process, the patient is better prepared for the method of open incision, which must be resorted to in a certain proportion of cases in order to accomplish the best results.

DISCUSSION.

Dr. S. J. Hunkin, San Francisco, thought it the duty of every surgeon to replace the hip joint in the quickest and easiest manner possible, let that method be according to the Lorenz plan, the Hoffa maneuver, or by an open incision. Dr. Hunkin considered that often it is better surgery to make an incision, open the capsule and put the head of the femur into the acetabulum under the eye, than to make severe traumatism and excessive ecchymoses, in a blind attempt. There is usually not so great difficulty in young children in getting the head of the femur to the site of the acetabulum as there is in maintaining it there. Often there is no acetabulum or only a small, shallow, smooth, slightly concave surface, and under such conditions, one may have to go back to the old Hoffa open operation, and scoop out a cavity big enough to hold the head. Dr. Hunkin remarked that the last speaker seems to have had some difficulty in preventing posterior reluxation, and he thought that due to the position maintained in the splint—the leg must be abducted and maintained at or posterior to the horizontal plane of the trunk. From this position an anterior transposition may result, but not a posterior reluxation. In addition to the usual splint Dr. Hunkin makes a later splint, open at the side and removable, which the patients wear at night for a year after they are free by day. This forces the limb into the extreme postoperative abducted position, for twelve hours a day, and a smaller percentage have relapsed since he has followed this plan.

Dr. DeForest Willard, Philadelphia, said that Dr. Willis' results correspond very closely with those of others who have attempted this operation. A certain number of young children will be benefited and a considerable number will be found after a time in a condition of ante-transposition. Some will be failures, which is the experience of all who have attempted it. If Dr. Willis' plan of gentle manipulation can replace the more forcible one it will be a great advance, but many accidents had resulted. As to the anterior transposition, especially in children over 7 or 8, where the bone has been put into a new position after the muscles have accommodated themselves to the former position, even if it be a dorsal one, Dr. Willard does not believe these cases are benefited in the least degree. They may walk with a little less lordosis, but they have not as good balancing power. They can not perform as good labor as if the head of the bone was lying in its original position. In the latter case they may walk badly, but they are stronger and better prepared for their work, which is important, especially with men. As to the open operation, it will likely result in a stronger hip, although we are very likely to have ankylosis. There is a danger in the open operation about which we should warn the patient in advance. As to the prognosis; from the newspaper reports the public expects that all these cases are going to walk as well as a well individual, but any surgeon who gives this idea to parents is unwise. We must be cautious in our prognosis, and we should not attempt the operation in too young children. Dr. Willard said he had not had much trouble in getting the hip back to the site of the acetabulum, where there is any acetabulum, but the majority of cases have none. The parts are all malformed and one can not make the head remain in position. It may stay there six months or two years, but some time or other the child must walk, and then comes the time when it will slide out of the acetabulum. It is simply a question of having a normal acetabulum before reduction should be attempted. If we have only a tea saucer, instead of a teacup, it will surely slide out again, and there is where the great difficulty arises.

Dr. C. O. Thienhaus, Milwaukee, Wis., said that while it has been generally accepted by the writers on congenital dislocation that in cases in which the retention after the bloodless reduction is difficult or the reduction impossible, a hypoplasia of the acetabulum is the underlying cause. Deutschlander has recently shown and proved by experiments on animals that in most of the cases of congenital dislocation we do not find a hypoplasia of the acetabulum, but a hyperplasia of cancellous and fibrous tissue within the acetabulum. This cancellous tissue, which can not be demonstrated by Roentgen rays, is one of the causes of difficulties in reduction by the Lorenz method and for retention of the head of the femur after the reduction has been accomplished. Dr. Thienhaus did not agree that the bloody operation will be the operation of the future. All those who are now the ardent advocators of the bloodless method, as Lorenz, Hoffa, Mickulicz, Lexer and others, tried the bloody methods of reduction first, but after a large experience taught them that by using this method we are very liable to have stiff joints as a result, and after they were convinced that the results obtained by the bloodless reductions were far superior to those obtained by the bloody methods, they accepted it as a law in all cases first to try the bloodless method of reduction, and after two or three attempts by this method have proved unsuccessful or the functional results obtained unsatisfactory, then to use the bloody method. If cases are taken at a suitable time, that is, from the third to the fifth year, surgery can show from 60 to 80 per cent. good functional results.

Dr. Harry M. Sherman, San Francisco, said that it certainly is a novelty to say that a congenital dislocation can be reduced by a gentle manipulation repeated a number of times, when it can not be reduced by violent manipulation at one sitting. Dr. Sherman said that it was as difficult for him to understand how Dr. Willis puts the femoral head through the narrow part of the capsule as it was difficult for him to understand how anyone can do it by violent manipulation after the method of Lorenz, excepting in a very small percentage of cases. The proposition is the old difficulty of making the femoral head pass the opening in the neck of the capsule. The former is invariably larger than the latter. The opening is smaller than is the bone which has to go through it. About the highest percentage of satisfactory anatomic repositions which can be expected is 10 per cent. with the forcible manipulation of Lorenz. Dr. Sherman still believes that the method which is right is the one which definitely does what the operator sets out to do. Dealing with a dislocation, the object is to reduce it. He said he could not accept any method as satisfactory which fails to reduce, and he did not see any reason for temporizing with a half-way measure when a real anatomic reduction can be accomplished by means of a small incision, an incision which shall go anterior to the tensor vaginæ femoris so as to avoid cutting off its nerve supply, and which shall cut no muscular tissue, and lying in its original position. In the latter case they may capsule of the joint. Through this the head can be put into the acetabulum and the reduction will have been accomplished. Dr. Sherman wanted to hear Dr. Willis' explanation of how he accomplishes the feat of making the camel go through the eye of the needle.

Dr. E. H. Parker, Portland, Ore., said that he has under his care a family in which the grandmother, aged 60, weighing 200 pounds, has congenital dislocation of the left hip joint, which has given no trouble all these years, although she has raised a large family. She walks with a limp, but gets along nicely. Her oldest daughter has congenital dislocation on the same side, but her granddaughter, a child of 10 years, is perfectly formed.

Dr. James E. Moore, Minneapolis, protested against the misnomer, "the bloodless operation." He declared it the most bloody and the most unsurgical procedure that he had ever had anything to do with. The operation of the future will be the open operation and not a mutilating one, which does not give the surgeon the opportunity to see what he is doing. There will be no more stiff legs and deformed children. The Lorenz method leaves the patients in worse condition than they were before.

Dr. S. C. Baldwin, Salt Lake City, said that he believes that Dr. Sherman is very near to the proper solution of the problem. There is in all these cases a malformation of the head and a filling up of the acetabulum. The head is so badly shaped that it will not stay in position. Dr. Baldwin said that the Lorenz operation is a very bloody operation, and that he does not believe that we should resort to it to such an extent as to cause a severe ecchymosis. The Hoffa operation does too much damage to the soft tissues. The operation of the future will be done in the general way Dr. Willis speaks of. After cutting down with a small incision, the head of the bone will be put in position. With all precautions there will at times be suppuration. It is not possible to avoid this in every case, and consequently an operation by the manipulation method without any great damage to the soft tissues is the best thing to do. Dr. Baldwin believes that the coming operation will be the Sherman operation.

Dr. A. J. Ochsner, Chicago, expressed the fear lest the drift of this discussion, being entirely against the manipulative method, should leave the wrong impression on the minds of those who have no experience with this operation. A great amount of harm has been done in patients not properly selected, especially as regards the age of the children, but this is not the case where the proper selection is made. Dr. Ochsner said that he could speak with authority because he has seen some twenty cases properly selected in which the dislocation was proved by the skiagraph before the treatment was begun and, after the treatment was completed, the skiagram showed that the dislocation had been reduced. Moreover, in one case of a double dislocation of which there is a skiagram, he has seen the specimen after autopsy, the patient having died three years later, after walking perfectly for one and a half years. The skiagram showed absolutely that there was a dislocation before this treatment was commenced, and as shown by the specimen, it was absolutely reduced; consequently this shows what can be done in properly selected cases. Dr. Ochsner said that he had never operated by the manipulative method. All of the cases he has observed before and after the treatment were operated on by his brother. In young children, to the age of 5 or 6 years, this method should be employed by a competent surgeon. If a surgeon knows how to perform this operation properly and chooses the proper kind of cases, this method will produce many excellent results which will be functionally and anatomically satisfactory.

Dr. P. W. Willis replied as to the position of one of the hips shown, of which it was said that this, being anterior to the plane of the body, would tend to cause a posterior dislocation. This hip was reported as being anterior and was brought forward purposely in order to bring the head of the bone back nearer the acetabulum. Some say that the open incision is a surgical procedure. After reading reports and hearing Dr. Willard's remarks, Dr. Willis still considers that this intensely surgical procedure gives us stiff joints and crippled patients. It does not matter whether the procedure is surgical or otherwise, providing the desired result is obtained. One speaker says: "Make a very little opening; what harm can it do?" Enough germs can get into a small opening to ruin both hips. A penetrating wound is one of the most dangerous. If an incision is decided on, make a large one to place the head in position. It is not everything, however, simply to open the joint. The long muscles are shortened, and it is necessary to stretch these and other structures in order to put the head into place. The reduction of the head is often easy, but to keep it there is the point. Even with open incision Dr. Willis' cases do not always stay there. According to the pathology of this condition, at birth the head of the bone is very close to the acetabular cavity, and in the majority of cases there is a large short capsule without contraction. As the child begins to walk, however, the head of the bone passes away from the socket and in time the capsule may be drawn out until it presents that contracted condition shown by Dr. Sherman. When this takes place the open operation is indicated. Good functional results are what we are striving for, and in many instances these can be obtained by the manipulative method. Dr. Willis disclaimed responsibility for the term "bloodless;" he did not refer to it in his paper. The operation is not bloodless, and even with great care there is ecchymosis. The manipulation should be as gentle as possible.

THE CURE OF HERNIA.*

HENRY O. MARCY, A.M., M.D., LL.D.

BOSTON.

Three decades have nearly passed since I first obtained respectful attention from the Section on Surgery of the American Medical Association, when I announced a new method for the cure of hernia.

This method was based on the reconstruction of the inguinal canal to its normal obliquity. This was rendered possible only by a free dissection of the parts, the resection of the redundant peritoneum and closure of the deeper structures beneath the cord. The cord was then replaced and the external structures united. The wound was sealed with collodion. The suture material was catgut, furnished me from Glasgow, Scotland, by the instrument maker who prepared ligatures for Mr. Lister, after his formula. The buried animal suture was the inspiration of the moment, born of necessity, in the closure of a strangulated inguinal hernia. This was in 1870. A long series of histologic experimental studies on animals was undertaken to determine the results of buried suturing, and the technic of the operation was carefully worked out in detail.

The crucial experience of the years has naturally resulted in very many modifications of technic, by many surgeons. The fundamental factors of the operation, however, must ever remain the same, since they are based on the physiologic plan of normal development.

The obliquity of the inguinal canal was more or less recognized by all the early anatomists, but, so far as I am aware, had never been emphasized, or even referred to, as the reason why hernia did not take place in the normally developed male. The reason that hernia is not more common is dependent on the fact that the intra-abdominal pressure, acting on the normal structures, brings this force to bear at right angles to the long axis of the canal and hence, the greater the pressure, the more closely the walls of the canal are approximated.

This valve-like construction of the canal is brought into play in the human organism only in two other instances: the entrance of the hepatic and pancreatic ducts into the intestine, and the point of entrance of the ureters into the bladder.

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* Read in the Section on Surgery and Anatomy of the American Medical Association, at the Fifty-sixth Annual Session, July, 1905.

The operative procedures for the cure of hernia are absolutely dependent on the use of buried sutures, since without them the reconstruction of the inguinal canal to its normal pattern is impossible.

More or less imperfect attempts were made to accomplish this, without recognition of the principle, by many of the early operators. One was the so-called invagination process, in which an instrument was firmly thrust, from below upward, through the canal, returning the peritoneal pouch, thereby carrying the cord upward, and fixing it in position by the introduction of wire sutures from below; more commonly they were brought out externally and twisted over some foreign material to protect the skin. Infection usually followed, and suppuration was welcomed because of the belief that the infiltration and induration, which supervened, greatly aided in strengthening the surrounding parts.

This method was improved on by the distinguished surgeon, John Wood of London, and his still well-known method of suturing by the implantation of wire, without the plug, in the canal. He became very dexterous in this operation and reported a large number of cures. Without especially emphasizing the reason, the result attained was the lifting of the internal ring and the cord to a much higher plane in the abdominal wall.

At an earlier period, great success was attained, especially by the surgeons of France, in the cure of hernia by boldly making an open wound, excising the testicle and cord and either closing it by means of sutures or, perhaps more commonly, by treating it as an open wound and allowing it to granulate from the bottom. This latter method was emphasized, since it was believed that the cicatricial mass resulting gave a stronger abdominal wall. It is extremely probable that these observations were correct, since the open-wound method and through and through suturing gave a wound almost necessarily septic, with a very imperfect result. Even now it does not appear possible that improvement could have been made on the older measures, until the scientific demonstration of wound infections, and, as a consequence, how to avoid them became the basis of a new technic. This must ever remain to the immortal honor of my great master, Lord Lister.

The object of this paper, however, is not a historical résumé, but rather to ascertain if, even now, we have arrived at a general consensus of opinion as to the measures which are essential and the operative procedures which should be adopted. At the outset let it be emphasized that, while the general measures of restoration may be agreed on, it is a well-known principle of applied mechanics that the operator best attains results by the means with which he is most familiar. While there are comparative means of excellence and the result attained good, the methods employed should never be considered absolutely faulty unless they fail to accomplish the end desired.

To make myself more clear, the first object of eating rice is the transposition of this nutritious article safely into the stomach. The Chinaman would declare that his chopsticks were used far more advantageously for this purpose, and besides that nine-tenths of all the rice eaten is expeditiously carried into the mouth by these simple instruments. Few Europeans or Americans, for this reason, however, would be content to abandon the fork or the spoon. For an equally good reason I should consider relatively immaterial the character of needle or other instruments employed. This view relegates as comparatively unimportant a very considerable number of so-called methods which are prominently labeled by the name of the author.

Beside the anatomic reconstruction, the one essential is the absorbable, animal suture. This may consist of properly prepared catgut, but for many reasons the carefully selected tendons from the smaller varieties of the kangaroo are much to be preferred. When prepared to retain their strength for only a few days—and they permit of ready absorption—they are ideal. They must be applied, however, so as to hold the reconstructed structures in coaptation with as little injury as possible and without constriction of the enclosed parts. Too much force applied is an almost universal criticism.

CAUSE.

When we remember the late period of development in fetal life, and that by second thought, as it were, Nature changed her plan and decided to remove the testicles from within the abdomen; and when we study the method by which she accomplishes this object, we not alone find the reason why such a large percentage of males suffer from hernia, but may wonder, rather, that more are not subject to this infirmity. The spermatic cord for the transfer of semen from the testicle to the seminal vesicle is not alone enormously lengthened, but its double system of accompanying vessels must be maintained. Organs of considerable size must be transposed to an entirely new relationship and they must carry before them a prolongation of the peritoneum as a proper protecting envelope. This dainty enwrapping structure becomes blended with the vas deferens and vessels, making up the component parts of the cord. This structure must lie at easy physiologic anchorage and yet the abdominal wall must not be weakened by its passage.

Defective closure of the internal ring is not rarely apparent, even in men who are not afflicted with hernia. Cloquet came to the conclusion, after 500 dissections, that the internal ring was so open that a depressed spot in the peritoneum marked its site, and this has since been called after him, the infundibular process of the peritoneum. In the normal subject, however, this is produced only by pulling on the cord, when, of course, its attachment will deflect outward the abdominal peritoneum. My own studies lead me to believe that the internal ring is often unduly open, owing to an incomplete development, and that this is by far the more common cause of hernia, even in those patients in whom this infirmity develops late in life.

By a singular, wise provision of Nature, the intestinal contents are so distributed that the law of gravity is minimized in its hydrostatic pressure. This, however, is necessarily greater in man, as an upright animal, on the lower portion of the abdominal restraining wall, than in the quadruped, and man, therefore, is much more likely to have hernia of the inguinal canal than animals.

Given a slight weakening of the internal ring in man, producing a dimpled depression, and multiply the intra-abdominal force constantly called into play by the time element of years, and we can easily see that there may come a period when these structures, little by little, may yield and form an opening for the lodgment, or escape, of a portion of the abdominal contents.

The man may not have been seriously incommoded until a late period of life. At last a sudden yielding of the external barrier gives evidence to him of the disability, which on this account has from time immemorial been called rupture.

The imperfect completion of the normal process following the extrusion of the testicle is often noticed in early childhood, when a decidedly open canal may be demonstrated, but Nature usually safely finishes the process during the early years of development; this is similarly noticed in umbilical hernia.

WHEN SHALL WE OPERATE?

The preceding discussion leads us to the proper consideration of the class of cases in which operation should be advised. During the tentative period of operative study, naturally all surgeons were more conservative. Since it has been shown that the operation is practically without risk to life, there has been a steadily increasing opinion favorable to operation. Contrary to the views of even a few years ago, at the risk of being dogmatic since the limits of the paper do not permit discussion, we may safely determine that the operation is advised on all children in whom there is difficulty in retaining the abdominal contents.

In children, my personal experience has been large and it has proved a profitable field of study in the elucidation of the fundamental causes of hernia.

Since the methods already referred to and which are to be more specifically described a little later have their simplest application in childhood, they are here to be especially commended. It is true that the surgical manipulation is as dainty as that on the eye, and, as a consequence, is as esthetically admired, but the collodion seal, as a sure antiseptic application, robs the subsequent treatment of its chief difficulty and danger. Were there not a more serious side to the consideration of the more commonly applied antiseptic dressings, by which the little patient is made an intense sufferer, this legacy of conservatism of the past would assume a most grotesque aspect. Some time since I saw one of these little martyrs of so-called modern science enveloped with swaddling clothes like a mummy, held in place by a plaster of Paris, fixed bandage, enveloping the little sufferer from the knees to the navel, and this in a children's hospital holding a first place in the greatest city of America.

A recent English writer tabulates several hundred operations on children, and ascribes a large share of his success to that which I unhesitatingly call a most cruel and injurious procedure.

All know that repair processes in young animals go on much more rapidly than elsewhere. The straining from crying is perhaps the greatest danger with which we have to contend. The happy child cries least, or not at all; and how can we hope to avoid these expressions of pain induced by such inquisitional surgery? The young adult, otherwise healthy, demands relief at our hands from a lifelong infirmity—an infirmity which debars him from athletics, from Government service, and from many of the more active and lucrative departments of life's vocations.

In all the older periods of life the hernial contents may not be safely and easily retained by external supports: in all the more grave and disabling conditions, where life's vocations are seriously limited, and pain and disability are present. There is a small class of cases in which the transposition of the abdominal contents is so extensive as not to permit a safe return into the contracted abdominal cavity, but this class is an extremely limited one and even there measures may be devised, preceding surgery, to make the operation usually a safe one.

OPERATIVE PROCEDURES.

In discussing the essentials, these should be reduced to the last analysis. Asepsis must be maintained, the contents of the hernial sac examined and reduced. The sac itself, if in any considerable degree pathologic and enlarged, is dissected to its base, evenly sutured, under slight tension, in the line of the axis of the canal and resected. The resilience of the peritoneum is quite sufficient to cause it to present an intra-abdominal smooth surface.

The suture best adapted for this purpose is a fine, double, continuous one, care being taken to coapt and not to constrict the included portions. The problem of restoration of the posterior wall of the canal is not so simple, owing in large measure to the deformed and weakened conditions found. Sir Astly Cooper, so far as I know, was the first to point out the singular increase of strength and reinforcement by Nature of the tendinous expansion of the transversalis muscle. Incorporated fibers of the muscle itself are sometimes seen to extend above the internal ring. When this condition exists the internal ring may be said to consist of a slightly ovate opening in the transverse muscle. One certainly finds Nature's strongest bulwark of the posterior wall of the canal to consist of these structures.

In a hernia that is at all pronounced, however, these are so weakened and deformed that they do not furnish a secure reinforcement for the reconstructed internal ring and posterior wall of the canal. In order to give additional strength, I have usually found it wise to include the posterior fibers of the conjoined tendon which are coapted with the posterior fibers of Poupart's ligament. In almost every instance in this way a safe, secure, firm posterior wall of the canal and internal ring, reformed high up on the cord posteriorly, may be constructed. It leaves, as lateral walls, the outer edge of the conjoined tendon and Poupart's ligament.

In other words, this portion of the canal, so far, has been restored in its normal relations and length. It now remains to replace the cord and to restore the divided fibers of the external oblique to reform the external wall of the canal. It may be well, at least for one of comparatively limited experience, to mark by forceps or suture the long, brilliant fibers of the external oblique at the time of division, and then there is an anatomic landmark for their reconstruction. I am in the habit of taking an extra suture through the structures which go to make up the upper border of the internal ring, since I have known a few cases of direct hernia to follow when the structures were unduly weak. This may not be necessary, but I deem it a wise precaution: a single mattress suture is usually the best means of reinforcement.

A third suture, subcuticular, also continuous and of the very finest type of material is taken through the deeper layer of the skin only; care should be observed that the needle does not penetrate the hair follicles or sweat ducts. If applied with proper care and accuracy, the edges of the skin are held in even coaptation. The collodion seal, reinforced by a few fibers of cotton, carefully applied and dried, finishes both the operation and the dressing.

If accurately and aseptically applied, easy, painless primary union will supervene.

Following these processes of repair, a strong, reconstructed inguinal canal is formed of normal obliquity. The intra-abdominal pressure is evenly borne by the reconstructed abdominal wall and hernia is no more likely to return than in the individual in whom the processes of normal development took place.

If the limits of this paper permitted, we would find a most interesting chapter of history in tracing the various modifications of this operation which have been recommended, especially during the last ten years.

Underlying these is a more or less intelligent effort at reconstruction to the normal pattern. The structures involved have been variably manipulated, even to the transplanting of the cord outside of the external oblique muscle. This latter method is, of course, not to be commended, since the structures of the cord are comparatively unprotected in their new relations and, at the best, emerge through a direct opening in the abdominal wall.

To all surgeons familiar with the practical advantages of the absorbable suture, it seems strange that any good operator can still be found using silk as a buried suture. Recently I discharged from the hospital a young, otherwise healthy, man who last December was operated on by one of Boston's chief hospital surgeons for the cure of hernia. By accident the cord was divided and, as a consequence, the testicle was removed. The hernia was cured, but he had had four subsequent operations because of stitch abscess. It became necessary to make a free dissection in order to find and to remove two deep silk ligatures, one of which was still encompassing the cord. The wound was reclosed by buried tendon sutures and the operation was followed by primary union. Instances of this sort are far too common to be considered accidental or ascribed to fault of technic other than the use of improper suture material.

Dr. Maynard of Dedham, Mass., in 1846 gave to the profession, as a surgical dressing, collodion, a discovery made incidentally to his research work in the investigation of gun cotton. The discovery has proved to be of very much greater value than was at first supposed, since its use in septic wounds, then almost invariably the rule, was detrimental rather than otherwise. An aseptic wound aseptically closed by aseptic, buried, absorbable sutures, is kept aseptic by the use of the collodion seal. Iodoform, in solution, inhibits the development of the *Streptococcus pyogenes albus* in the skin. The seal is loosened only by the proliferation of the epidermal cells and is absolutely trustworthy for a week or ten days. Such a seal may be reapplied, but an aseptic wound thus aseptically treated has in this period undergone processes of repair and is beyond the danger of subsequent infection.

The measures here recommended apply equally well to all aseptic wounds in all parts of the body, but they were first used and their values demonstrated in my early operative work for the cure of hernia.

Special Article

IMMUNITY.

CHAPTER XXIII.

PARATYPHOID FEVER.

Two Types of Organism.

In 1900 Schottmüller cultivated from the blood of five "typhoid" patients organisms which differ from the typhoid bacillus in that they attack dextrose with gas formation and are not agglutinated conspicuously by antityphoid serum. Since that time, many similar cases have been reported and two types of the paratyphoid bacillus have been recognized (Schottmüller). Group B causes first an acid reaction in milk which changes to a permanently alkaline reaction in about ten days, whereas Group A causes permament acidity. (Kayser.) They resemble the typhoid bacillus morphologically. These organisms are more closely related to the bacillus enteritidis than to the typhoid bacillus.

The term paratyphoid is justified only because of the similarity of the symptoms to those of typhoid fever.

"Paracolon" Bacilli.

Previous to the observations of Schottmüller, Widal, in 1897, had shown a "paracolon" bacillus to be the cause of a typhoid-like infection, and a similar observation was made by Gwyn in this country in 1898. These organisms are not different from those which are now called paratyphoid bacilli, and the infections resemble the recorded cases of paratyphoid fever. The term "paracolon" should no longer be applied to these organisms.

Methods of Infection.

The disease occurs sporadically or in epidemic form, and bears a close resemblance to mild typhoid-like epidemics which have been noted from time to time, and which, presumably, were caused by eating poisonous meats. One such epidemic of 600 cases was caused in Switzerland in 1878 by the meat of a sick calf; the mortality was 1 per cent. A still older epidemic (1839) is cited, likewise caused by meat. In both instances, the infection eventually was carried from person to person by contact. A recent epidemic in Kiel, proved to be paratyphoid, is assumed by Fischer to have been caused by infected meat, on account of the peculiar distribution of the cases among the patrons of a particular market. Kurth also attributed a small epidemic to either uncooked meat or milk. Fischer mentions an epidemic of 50 cases in East Holstein which probably was caused by the milk of two infected cows. Shortly after the epidemic began the cows died and paratyphoid bacilli were cultivated from the muscles, spleen, liver and intestines. Infected water also may cause epidemics. De Feyfer in an epidemic of 14 persons in Holland, considered that the disease was transmitted through the water of a stream in which the clothing of the first patients had been washed. In another instance, a regimental infection (Saarbrücken) was traced to the discharges of a single soldier, the water supply having become contaminated through a defective water closet.

Characteristics of the Disease.

Paratyphoid, like typhoid fever, is accompanied by an enlarged spleen and many rose spots. Although severe symptoms may be present for a time the course of the disease usually is mild and the mortality is low. The incubation period approximates that of typhoid. In the few cases which have come to autopsy the intestinal lesions have varied from a mild ileocolitis with an intact mucous surface to a condition of superficial ulceration. The involvement of Peyer's patches and the solitary follicles which is so characteristic of typhoid is absent, although these structures may be moderately swollen. The mesenteric lymph glands are not markedly involved and there is little proliferation of the lymphoid or endothelial cells (Wells and Scott). The disease has no specific anatomic lesion.

Occurrence of Bacillus in the Body.

The organisms are found in the blood and various organs, in the rose spots, urine and feces of the patients. Practically nothing is known of the occurrence of the bacilli outside the body. Because of their presence in the stools and urine of the patients, the methods of dissemination and infection doubtless are similar to those concerned in typhoid. The bacillus is said to have a marked resistance to heat, withstanding 60 degrees C. for 30 minutes and not all cells being killed during one hour at this temperature. This may explain the fact that the virus is not always killed by cooking the meat. The organism probably has a wide distribution because of the occurrence of the infection in various parts of the world.

The toxicity of the bacilli depends on the existence of a fixed endotoxin; a soluble toxin is not produced.

The principles of prophylaxis against typhoid also apply to paratyphoid fever, with the addition that in the latter disease the possibility of meat infection must be kept in mind.

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Since the methods already referred to and which are to be more specifically described a little later have their simplest application in childhood, they are here to be especially commended. It is true that the surgical manipulation is as dainty as that on the eye, and, as a consequence, is as esthetically admired, but the collodion seal, as a sure antiseptic application, robs the subsequent treatment of its chief difficulty and danger. Were there not a more serious side to the consideration of the more commonly applied antiseptic dressings, by which the little patient is made an intense sufferer, this legacy of conservatism of the past would assume a most grotesque aspect. Some time since I saw one of these little martyrs of so-called modern science enveloped with swaddling clothes like a mummy, held in place by a plaster of Paris, fixed bandage, enveloping the little sufferer from the knees to the navel, and this in a children's hospital holding a first place in the greatest city of America.

A recent English writer tabulates several hundred operations on children, and ascribes a large share of his success to that which I unhesitatingly call a most cruel and injurious procedure.

All know that repair processes in young animals go on much more rapidly than elsewhere. The straining from crying is perhaps the greatest danger with which we have to contend. The happy child cries least, or not at all; and how can we hope to avoid these expressions of pain induced by such inquisitional surgery? The young adult, otherwise healthy, demands relief at our hands from a lifelong infirmity—an infirmity which debars him from athletics, from Government service, and from many of the more active and lucrative departments of life's vocations.

In all the older periods of life the hernial contents may not be safely and easily retained by external supports; in all the more grave and disabling conditions, where life's vocations are seriously limited, and pain and disability are present. There is a small class of cases in which the transposition of the abdominal contents is so extensive as not to permit a safe return into the contracted abdominal cavity, but this class is an extremely limited one and even there measures may be devised, preceding surgery, to make the operation usually a safe one.

OPERATIVE PROCEDURES.

In discussing the essentials, these should be reduced to the last analysis. Asepsis must be maintained, the *contents of the hernial sac* examined and reduced. The sac itself, if in any considerable degree pathologic and enlarged, is dissected to its base, evenly sutured, under slight tension, in the line of the axis of the canal and resected. The resilience of the peritoneum is quite sufficient to cause it to present an intra-abdominal smooth surface.

The suture best adapted for this purpose is a fine, double, continuous one, care being taken to coapt and *not to constrict* the included portions. The problem of restoration of the posterior wall of the canal is not so simple, owing in large measure to the deformed and weakened conditions found. Sir Astly Cooper, so far as I know, was the first to point out the singular increase of strength and reinforcement by Nature of the tendinous expansion of the transversalis muscle. Incorporated fibers of the muscle itself are sometimes seen to extend above the internal ring. When this condition exists the internal ring may be said to consist of a slightly ovate opening in the transverse muscle. One certainly finds Nature's strongest bulwark of the posterior wall of the canal to consist of these structures.

In a hernia that is at all pronounced, however, these are so weakened and deformed that they do not furnish *a secure reinforcement for the reconstructed internal ring and posterior wall of the canal. In order to give* additional strength, I have usually found it wise to include the posterior fibers of the conjoined tendon which *are coapted with the posterior fibers of Poupart's ligament.* In almost every instance in this way a safe, secure, *firm posterior wall of the canal and internal ring,* reformed high up on the cord posteriorly, may be constructed. It leaves, as lateral walls, the outer edge of the conjoined tendon and Poupart's ligament.

In other words, this portion of the canal, so far, has been restored in its normal relations and length. It now remains to replace the cord and to restore the divided fibers of the external oblique to reform the external wall of the canal. It may be well, at least for one of comparatively limited experience, to mark by forceps or suture the long, brilliant fibers of the external oblique at the time of division, and then there is an anatomic landmark for their reconstruction. I am in the habit of taking an extra suture through the structures which go to make up the upper border of the internal ring, since I have known a few cases of direct hernia to follow when the structures were unduly weak. This may not be necessary, but I deem it a wise precaution: a single mattress suture is usually the best means of reinforcement.

A third suture, subcuticular, also continuous and of the very finest type of material is taken through the deeper layer of the skin only; care should be observed that the needle does not penetrate the hair follicles or sweat ducts. If applied with proper care and accuracy, the edges of the skin are held in even coaptation. The collodion seal, reinforced by a few fibers of cotton, carefully applied and dried, finishes both the operation and the dressing.

If accurately and aseptically applied, easy, painless primary union will supervene.

Following these processes of repair, a strong, reconstructed inguinal canal is formed of normal obliquity. The intra-abdominal pressure is evenly borne by the reconstructed abdominal wall and hernia is no more likely to return than in the individual in whom the processes of normal development took place.

If the limits of this paper permitted, we would find a most interesting chapter of history in tracing the various modifications of this operation which have been recommended, especially during the last ten years.

Underlying these is a more or less intelligent effort at reconstruction to the normal pattern. The structures involved have been variably manipulated, even to the transplanting of the cord outside of the external oblique muscle. This latter method is, of course, not to be commended, since the structures of the cord are comparatively unprotected in their new relations and, at the best, emerge through a direct opening in the abdominal wall.

To all surgeons familiar with the practical advantages of the absorbable suture, it seems strange that any good operator can still be found using silk as a buried suture. Recently I discharged from the hospital a young, otherwise healthy, man who last December was operated on by one of Boston's chief hospital surgeons for the cure of hernia. By accident the cord was divided and, as a consequence, the testicle was removed. The hernia was cured, but he had had four subsequent operations because of stitch abscess. It became necessary to make a free dissection in order to find and to remove two deep silk ligatures, one of which was still encompassing the cord. The wound was reclosed by buried tendon sutures and the operation was followed by primary union. Instances of this sort are far too common to be considered accidental or ascribed to fault of technic other than the use of improper suture material.

Dr. Maynard of Dedham, Mass., in 1846 gave to the profession, as a surgical dressing, collodion, a discovery made incidentally to his research work in the investigation of gun cotton. The discovery has proved to be of very much greater value than was at first supposed, since its use in septic wounds, then almost invariably the rule, was detrimental rather than otherwise. An aseptic wound aseptically closed by aseptic, buried, absorbable sutures, is kept aseptic by the use of the collodion seal. Iodoform, in solution, inhibits the development of the *Streptococcus pyogenes albus* in the skin. The seal is loosened only by the proliferation of the epidermal cells and is absolutely trustworthy for a week or ten days. Such a seal may be reapplied, but an aseptic wound thus aseptically treated has in this period undergone processes of repair and is beyond the danger of subsequent infection.

The measures here recommended apply equally well to all aseptic wounds in all parts of the body, but they were first used and their values demonstrated in my early operative work for the cure of hernia.

Special Article

IMMUNITY.

CHAPTER XXIII.

PARATYPHOID FEVER.

Two Types of Organism.

In 1900 Schottmüller cultivated from the blood of *five* "typhoid" patients organisms which differ from the typhoid bacillus in that they attack dextrose with gas formation and are not *agglutinated* conspicuously by antityphoid serum. Since that time, many similar cases have been reported and two types of the paratyphoid bacillus have been recognized (Schottmüller). Group B causes first an acid reaction in milk which changes to a permanently alkaline reaction in about ten days, whereas Group A causes permament acidity. (Kayser.) They resemble the typhoid bacillus morphologically. These organisms are more closely related to the bacillus enteritidis than to the typhoid bacillus.

The term paratyphoid is justified only because of the similarity of the symptoms to those of typhoid fever.

"Paracolon" Bacilli.

Previous to the observations of Schottmüller, Widal, in 1897, had shown a "paracolon" bacillus to be the cause of a typhoid-like infection, and a similar observation was made by Gwyn in this country in 1898. These organisms are not different from those which are now called paratyphoid bacilli, and the infections resemble the recorded cases of paratyphoid fever. The term "paracolon" should no longer be applied to these organisms.

Methods of Infection.

The disease occurs sporadically or in epidemic form, and bears a close resemblance to mild typhoid-like epidemics which have been noted from time to time, and which, presumably, were caused by eating poisonous meats. One such epidemic of 600 cases was caused in Switzerland in 1878 by the meat of a sick calf; the *mortality* was 1 per cent. *A still older epidemic (1839)* is cited, likewise caused by meat. In both instances, the infection eventually was carried *from person to person* by contact. A recent epidemic in Kiel, proved to be paratyphoid, is assumed by Fischer to have been caused by infected *meat*, on account of the peculiar distribution of the cases *among the patrons of* a particular market. Kurth also attributed a small epidemic to either uncooked meat or milk. Fischer mentions *an epidemic* of 50 cases in East Holstein which probably was caused by the milk of two infected cows. Shortly after the epidemic began the cows died and paratyphoid bacilli were cultivated from the muscles, spleen, liver and intestines. Infected water also may cause epidemics. De Feyfer in an epidemic of 14 persons in Holland, considered that the disease was transmitted through the water of *a stream* in which the clothing of the first patients had been washed. In another instance, a regimental infection *(Saarbrücken) was traced to* the discharges of a single soldier, the water supply having become contaminated through a defective water *closet*.

Characteristics of the Disease.

Paratyphoid, like typhoid fever, is accompanied by *an* enlarged spleen and many rose spots. Although severe symptoms may be present for a time the course *of the disease* usually is mild and the *mortality* is low. The incubation period approx*imates that* of typhoid. In the few cases *which have come* to autopsy the intestinal lesions have varied from a mild ileocolitis with an intact mucous surface to a condition of superficial *ulceration*. The involvement of Peyer's patches and the *solitary* follicles which is so characteristic of typhoid is *absent, although* these structures may be moderately swollen. The *mesenteric* lymph glands are *not markedly involved* and *there is little proliferation of the* lymphoid or endothelial cells (Wells and Scott). *The* disease has no specific anatomic lesion.

Occurrence of Bacillus in the Body.

The organisms are found in the blood and various organs, in *the rose spots*, urine and feces of the patients. Practically *nothing* is known of the occurrence of the bacilli *outside the body*. Because of their presence in the stools and urine of the patients, the *methods of dissemination* and *infection* doubtless are similar to those concerned in typhoid. The *bacillus is said* to have a marked resistance to heat, withstanding 60 degrees C. for 30 minutes and *not all cells* being killed during one hour at this temperature. This *may explain the fact* that the virus is not always killed by cooking the meat. The organism probably has a wide *distribution* because of the occurrence of the infection in various *parts of the* world.

The toxicity *of the bacilli* depends on the existence of a fixed endotoxin; a soluble *toxin* is not produced.

The principles of *prophylaxis* against typhoid also *apply* to paratyphoid fever, [illegible] n that in the latter disease the possibility [illegible] n must be kept in *mind*.

The serums of patients and immunized animals acquire bactericidal and agglutinating powers for the organism.

There is no serum therapy for the infection, nor has the occasion arisen to attempt vaccination.

Agglutination and Blood Cultures.

Serum from a paratyphoid patient may agglutinate the homologous bacillus in a dilution of 1/1000 or 1/2000 or more (E. H. Ruediger), whereas the typhoid bacillus is agglutinated only in low dilutions by the same serum. However, bacillus A and bacillus B are not identical in their agglutinable properties; in this respect it is stated that the latter is more closely related to the typhoid bacillus than the former. The agglutination test is said to have a higher diagnostic value than the Gruber-Widal reaction in typhoid, a stronger agglutinating power being developed in the serum of the patient. Nevertheless, the formation of coagglutinins may render the test confusing if proper serum dilution is not practiced. Conclusions should not be attempted until the test has been performed with both strains of the paratyphoid bacillus and with the typhoid bacillus. As in typhoid, early diagnosis may be best accomplished by bacteriologic examination of the blood.

DYSENTERY (BACILLARY).

Amebic Dysentery.

In 1878, Lösch, in St. Petersburg, discovered in the stools of dysenteric patients a protozoon ameboid organism which is now recognized as the cause of amebic dysentery. The organism is called Amœba coli (Lösch) or Amœba dysenteriæ (Councilman and Lafleur). The disease prevails especially in tropical and subtropical climates, but also occurs in sporadic form or in small epidemics in temperate latitudes, and often becomes chronic.

Bacillary Dysentery.

There is another type of dysentery, an acute infection which often appears in widespread epidemic form in both tropical and temperate climates, and prevails especially in the summer months. Such epidemics occur extensively in Japan, where the mortality may be 24 per cent.; in the Philippines, United States, Germany and other European countries. In industrial settlements in Germany the mortality is about 10 per cent. (Kruse). The incubation period may be as short as two or three days. In mild cases the patient may recover in from four to eight days, whereas severe cases last from two to four weeks, during which time death may occur. Occasionally the infection lasts sufficiently long to be considered chronic.

Two Types of Bacilli.

In 1898, Shiga, basing his conclusions on positive results with the agglutination test and on the constant presence of the organism in the stools of the infected, identified as the cause of the disease in Japan a microbe which is known as Bacillus dysenteriæ (Shiga). Flexner, in 1900, made similar observations on epidemic dysentery in Manila, and his organisms or one of them, differing slightly from that of Shiga is called Bacillus dysenteriæ (Flexner), or the Flexner-Harris bacillus, Harris being the name of the patient from whom this typical strain was cultivated. Kruse (1901) found both the Shiga and Flexner types in Germany, needlessly giving the names of "pseudodysentery" bacilli to the latter. In this country similar organisms have been found as the cause of institutional dysentery by Vedder and Duval,

Summer Diarrheas.

of summer diarrheas of infants by Duval and Bassett, and by Wolstein. It is the belief of Vedder and Duval that acute dysentery, the world over, "whether sporadic, institutional or epidemic, is caused by the dysentery bacillus." We must note, however, that the organism is not found in all cases of clinical dysentery, even by skilled bacteriologists. "Clinically, 24 of our 97 cases in which dysentery bacilli were found did not differ from the cases of ileocolitis in which the dysentery bacilli were not found." (Weaver and others.) It seems certain, nevertheless, that Bacillus dysenteriæ is the most important cause of acute dysentery. It rarely occurs in the stools of healthy individuals.

Characteristics of the Bacilli.

The organism has about the dimensions of the typhoid bacillus, but is thicker. It probably is non-motile, although Vedder and Duval, in opposition to others (Lentz) claim to have demonstrated flagallæ. It often shows a polymorphous appearance in cultures, but forms no spores. It is Gram-negative. It lives for from 12 to 17 days when dried (Pfuhl); direct sunlight kills it in 30 minutes, 1 per cent. carbolic acid in 30 minutes, 5 per cent. carbolic acid plus corrosive sublimate (1/20000) almost instantaneously. It is thought that it may live over winter and cause fresh outbreaks in the spring (Kruse). The organisms of Shiga and Flexner differ in their actions on sugars (i. e., in their acid-forming powers) and in the agglutinability. "The 'Shiga' type attacks glucose, but none of the other sugars, including mannite and lactose. The 'Flexner' type attacks glucose and mannite and dextrin but not lactose." (Flexner.) The "Flexner type then is the stronger acid-forming. An artificially produced immune serum which is specific for one organism has rather higher agglutinating and bactericidal powers for the corresponding type, but low for the other. Several other organisms have been cultivated from dysenteric patients, but their variations from these two types are slight. All are certainly very closely related. In this country the "Flexner" bacillus is much more common than that of "Shiga," but here and abroad both types are met, and sometimes in the same individual.

Distribution in the Body.

In the living, the bacillus is found only in the stools of the infected, in the mucous or muco-hemorrhagic portions of which it exists almost in pure culture, few colon bacilli being in the immediate vicinity; it has not been found in the blood or urine. In fatal cases, Shiga found it only in the intestinal ulcers and swollen lymphoid structures and in the mesenteric lymph glands. Flexner mentions its occurrence in the liver. The organism, if it reaches the circulation at all, either does so in small quantities, or is rapidly destroyed by the blood. The infection resembles cholera, but differs from typhoid and paratyphoid in this respect. An observation by Markwald (cited by Lentz) indicates, however, that the bacilli may reach the circulation. A woman sick with dysentery gave birth to a child, which died within a few hours. Dysenteric changes were found in the intestines, and the bacillus of dysentery was cultivated from the diphtheritic deposits on the intestines, from the meconium and from the heart's blood. The organisms must have reached the child through the placenta from the circulation of the mother.

Lesions.

The intestinal lesions vary from a simple inflammatory hyperemia to rather extensive superficial necrosis (diphtheritic inflammation), which rarely extends below the submucosa. Such foci are said to be the most marked in the descending colon and sigmoid where mechanical injury is most likely to occur. The necrotic areas separate by sloughing, leaving superficial ulcers. The lymphoid follicles are swollen and infiltrated with polymorphonuclear leucocytes, which also accumulate in the dilated lymph spaces of the intestinal wall. The ileum is so commonly involved that the condition is called an ileocolitis. Conspicuous changes are not found in the mesenteric glands or spleen. The liver and kidneys commonly show parenchymatous degenerations.

Toxicity of Organisms.

The dysentery bacillus is a highly toxic organism. Subcutaneous injections of killed cultures in man produce a more profound reaction than the organism of either cholera or typhoid. Ordinary laboratory animals are so susceptible that they are immunized with difficulty; the horse is less susceptible. The toxicity of the organism apparently depends on an intracellular toxin (an endotoxin) rather than on a soluble toxin. When living or killed cultures are submitted to autodigestion in salt solution (Conradi, Nisser and Shiga), or when bouillon cultures are allowed to grow for 30 days, the liquids are found to be toxic after the organisms are removed. In both instances, this toxicity probably depends on the liberation of endotoxins. The question as to whether the bacillus in the intestines produces a soluble toxin which is absorbed by the lymphatics, is undetermined. It seems more probable that the conditions are analogous to those of cholera, intoxication resulting from the liberation of endotoxins by the solvent action of the tissue fluids or cells on the bacilli. Dysenteric symptoms are not produced in animals by feeding the organisms.

Dissemination and Infection.

The stools of the patient are the only known source of the organism and it continues to be excreted during convalescence. Latent or chronic cases are a source of danger to a community. Although the conditions outside the body are not favorable for the growth of the organism, it may remain living and virulent for several months. The methods of infection appear identical with those seen in typhoid. Water infection seems certain, and indirect transmission is readily accomplished by contact with the discharges. The best examples of contact infection are found in institutions, as insane asylums, or foundlings' homes, where the disease may become endemic.

Prophylaxis and Susceptibility.

The first essential for prophylaxis is correct diagnosis, for which the agglutination tests and bacteriologic examination of the stools are essential. Disinfection and other precautions should be practiced as rigidly as in typhoid. The patient should not be discharged until the stools are free from dysentery bacilli.

Poorly nourished individuals are particularily susceptible to infection, and among them the mortality is high. The disease is most common among young children, old people, and those who are confined in institutions. The conditions in Japan, however, where from June to December of one year nearly 90,000 were attacked, and in Germany, where severe epidemics occur in industrial communities, indicate that susceptibility is quite general. Digestive disturbances and enteritis from other causes are said to be predisposing factors. The normal serums of man and animals have very little bactericidal power for dysentery bacilli.

Immunity.

The subject of acquired immunity to dysentery is hardly on a satisfactory basis. The serum of convalescents shows a distinct bactericidal power for the organism, and there is good reason to believe that the acquired immunity persists for some time after the disappearance of the bactericidal amboceptors, an event which takes place rather early. As in typhoid, animals which through immunization have once been stimulated to produce antibodies, form them much more readily on the occasion of a subsequent inoculation. This acquired facility of producing antibodies may be a factor in acquired immunity. By immunizing horses, serums of rather high prootective power have been obtained. Kruse prepared a serum of which 1/80000 gram would save a guinea-pig from a dose of the bacilli which killed a control in 20 hours. It is assumed that the protective power of this serum is due to its bactericidal action. The antitoxic serum which Rosenthal prepared, by immunizing with 30 days' old bouillon cultures, protected not only against the toxin, but also against the bacilli; and conversely an antibacterial serum protected against the toxin (cited by Lentz). Such results leave us very much in doubt as to the existence of a true antitoxic serum.

Vaccination and Serum Therapy.

The value and feasibility of protective inoculations are not well established. Shiga at one time practiced mixed active and passive immunization (bacilli plus immune serum) on 10,000 individuals. This did not decrease the number of infections, although a lower mortality resulted. Shiga claims that the therapeutic use of his serum reduces the mortality to one-third of the untreated. The serum of Kruse, and also that of Rosenthal, are said to be curative; the discharges rapidly decrease in number and the course of the disease is shortened. In the hands of the Rockefeller Institute antidysentery serum proved of no distinct value.

Agglutination.

The agglutination reaction with the serum of patients shows great variability. It is sometimes absent in spite of the presence of bacilli in the stools, and often disappears rapidly during convalescence (in two weeks occasionally). It is rarely as high as in typhoid, and this is true also of artificially prepared serums. In infantile diarrrheas it commonly appears at about the end of the first week of illness (Duval and Bassett). Evidently mild cases in which the course of the disease is from four to eight days may not be recognized by means of the agglutination reaction before the period of convalescence. In chronic cases it may persist from three to four months. In a series of cases studied by Duval and Bassett, the reaction with the serums of the patients was obtained in dilutions varying from 1/16 to 1/25, twenty times; 1/40 to 1/60, twelve times; 1/100, twice; 1/200, three times 1/500, once; 1/1000 twice. No reaction was obtained with the typhoid bacillus. Kruse considers the reaction diagnostic when it occurs in a dilution of 1/50; Pfuhl, 1/30. Strong co-agglutinins for other organisms, i. e., above 1/50,, have not been observed (Lentz). The tests should always be performed with both the "Shiga" and "Flexner" types, as the two have not identical agglutinable properties, and either organism may be the cause in a given instance. The absence of the reaction does not exclude dysenteric infection positively. Bacteriologic examination of the stools is important, often necessary, for early diagnosis.

Clinical Report

A CASE OF AINHUM.

MARCUS F. WHEATLAND, M.D.

NEWPORT, R. I.

Seeing the article on ainhum by Dr. Brayton in The Journal, July 8, 1905, reminded me of a similar case which came under my care about six years ago and which was reported to the Newport Medical Society during the past year.

Previous and Family History.—M. R., negro, widow, aged 53, was born in Queen Anne County, Maryland. Her mother died in childbirth, aged 42; her father was part Indian, and died of rheumatism, aged 92; he lost both toes when about 23 years old.

The patient consulted me in December, 1899, at which time a band had formed around the base of the little toe of the left foot, and from a fissure formed at this point there came a discharge. The toe was swollen and painful. With cleanliness it improved and remained quiescent until 1903, when it again began to swell and to cause great pain. The patient stated that one evening while in great pain the toe parted from the foot as if shot from a pistol and landed about 8 feet across the room carrying with it a piece of cloth which was wrapped around it. The disease appeared in the right foot about two years previous to its appearance in the left, but the process in the former was never very active. She thinks the process in the left foot was completed in four years.

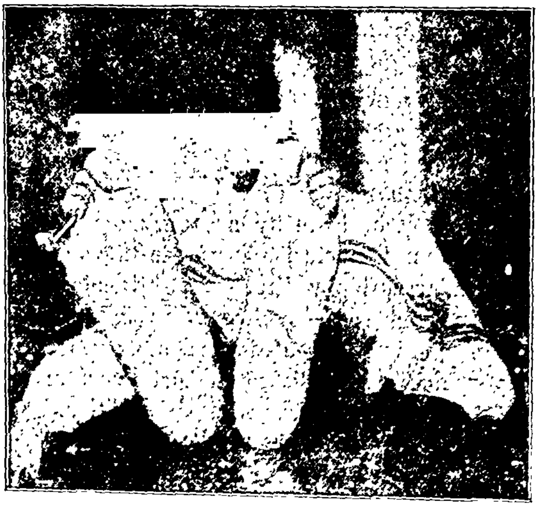

Fig. 1.—Little toe on left foot severed. Little toe on right foot constricted at base. Toe not much swollen.

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RECENT ADVANCES IN PHYSIOLOGIC CHEMISTRY.

In his recent address before the American Chemical Society at its Buffalo meeting, Professor J. H. Long[1] discusses briefly some of the most important recent advances in physiologic chemistry. While the work referred to may be familiar to many, nevertheless an outline of Professor Long's address may not be without interest because it should give us a fairly definite idea of what the actual workers in this field, the physiologic chemists, themselves consider the most important lines of advance.

The first problem discussed is that of protein in nutrition, a much debated question ever since the beginning of physiologic chemistry. Liebig held that the protein substances were built up into tissues and that the oxidation of these was the sole source of muscular energy. In 1866, however, Fick and Wiolicenus showed that protein combustion was far too little to account for the muscular work done in an ascent of Faulhorn, and since then practically all who have investigated the subject have concluded that fats and carbohydrates are the usual sources of muscular energy in man. The Liebig theory implied that our protein consumption should be high, but in time the wisdom of this plan came to be doubted. If protein is of use mainly to repair waste in the tissues, why expend large amounts of extra energy on the useless metabolization of more protein many times over than necessary? Thus arose the question how much protein is really necessary for the normal body? The most conclusive answer to this question has been given recently by Professor Chittenden of Yale University, based on experiments on himself and on groups of men engaged in different occupations, the results of which are published in book form under the title of "Physiological Economy of Nutrition." These results show, as is no doubt well known to most of our readers, that the usual protein intake may be restricted greatly for persons in all ordinary occupations (professional men, soldiers, athletes), and with evident benefit so far as the general physical condition is concerned. Consequently, the Chittenden investigation marks a decided step forward in the adjustment of our diet to our physiologic needs—a most important advance in physiologic chemistry, and of direct interest to physicians.[2]

The next phase discussed by Long deals with the structure and composition of the protein molecule. This problem is even older than the previous one, and up till about five years ago the work on it was largely by way of destructive analysis, and it became established that the products of protein destruction are essentially the same so long as it is done in water. The question now arose, is it possible to build up a true protein molecule with these substances, and the answers so far obtained are connected with the two names especially, Curtius and Fischer. Curtius has produced a large number of amino groups and Fischer has synthetized a large number of substances called by him polypeptids, many of which are hydrolyzed by pancreatic juice, give the biuret reaction, etc. In this way it is expected that bodies of great physiologic interest may be constructed.

The study of the soluble ferments is another field of physiologic chemistry in which great advances are being made. A few years ago the question of digestive enzymes was looked on as settled, but the recent investigations of Pawlow has upset entirely the established conceptions of their action. Pawlow has shown that the same digestive ferments have peptic and milk-curdling powers and discovered, furthermore, a new group of ferments called kinases, or activators, the most important being enterokinase, which converts inactive pancreatic juice into active. The erepsin katabolism of peptones, described by Cohnheim, has made clearer the hitherto unknown fate of these substances, which are now believed to be split up in the intestinal wall.

Finally, Long discusses the relations of chemistry to immunity. He points out first that chemists no longer regard all theories of immunity as "visionary and intangible," and that some of the phrases of the Erlich theory are now a part of the language of organic chemistry. The controversy between Arrhenius and Ehrlich as to the character of the reactions between toxin and antitoxin, whether reversible, as claimed by Arrhenius, or not, is outlined, and the opinion expressed that at present the theories of Ehrlich and his followers, based on the presence, as they claim, of several toxins in the fibrates of broth cultures of diphtheria bacilli, may serve to advance investigation better than the Arrhenius theory, an opinion that probably coincides closely with that of immunologists in general.

We note that Long has emphasized four distinct lines along which physiologic chemistry has made and is making progress, namely, the value of protein in nutrition, the composition of the protein molecule, the soluble ferments, and the chemical relations of toxins and other substances and their antibodies. Add to the achievements outlined in these lines the fundamental rôle that chemistry is known to play in general physiologic processes and in pharmacology, and the overwhelming importance of chemistry in normal and pathologic physiology can not be denied.

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[1] Science, Aug. 4, 1905.

[2] This matter was discussed very thoroughly by Dr. Billings and others in the Section on Practice of Medicine at the Portland Session of the Association.

ANTISTREPTOCOCCUS SERUM IN THE TREATMENT OF SCARLET FEVER.

Ever since the first careful bacteriologic studies of scarlet fever were made, it has been recognized that streptococci are almost constantly associated with this disease. The earlier investigations were made on the bacteriology of the throats and of the internal organs and bone marrow in fatal cases. Streptococci were found in a large percentage of these throats and organs, but the investigators regarded the invasion by these organisms as of a secondary nature and not as an essential part of the disease. More recently, blood cultures have shown that these organisms can be cultivated from the blood during life in only a small percentage of cases—12 per cent. in Hektoen's series of 100 cases. Baginsky and Sommerfeld, however, found streptococci in all the organs in every one of 82 cases which they examined postmortem. Some of these patients had died during the first days of the disease before there were signs of a secondary infection. So greatly impressed were these investigators with their findings that they have regarded the streptococcus as the etiologic factor of scarlet fever. This view has not been widely accepted, as the weight of evidence is in favor of the view that these organisms are secondary invaders.

In the light of these facts, it is not surprising that antistreptococcus serum should be tried in the treatment of this disease. This has been done by a number of investigators, among whom may be mentioned Aronson, Moser, Baginsky and Charlton. The earlier reports by these men were very encouraging, but it seems that too small a number of patients had been treated to draw conclusions from the results. Furthermore, some of these men are interested in the manufacture of the serum which they have used, and hence are probably somewhat prejudiced in favor of this treatment. Very recently Mendelsohn[1] of Baginsky's laboratory reported a long series of cases (146 in all) in which the patients were treated with Aronson's antistreptococcus serum. The mortality in this series was 9.2 per cent., which is not any better than the results obtained without serum in the mild epidemics. None of the complications were entirely prevented. Severe lymphadenitis was present in 8 per cent. of the cases and in 17 per cent. of those without serum. A larger proportion suppurated of those that were treated with serum than of those that were not injected. Otitis media developed in 13 per cent. of the injected cases and in 15 per cent. of the uninjected; hemorrhagic nephritis was present in 11.6 per cent. of the injected cases and in 12.2 per cent. of the uninjected cases.

This report shows that there is no great difference between the cases that are treated with antistreptococcus serum and those that are treated without the serum. In view of the fact that the streptococcus plays such an important part in the complications of this disease, it would seem that the failure in getting results with antistreptococcus serum must be due to improper methods of preparing the serum. We know that none of the antistreptococcus sera thus far prepared has demonstrable therapeutic value. It seems, therefore, that good results in the serum therapy of scarlet fever might be obtained if we had a more efficient antistreptococcus serum. Aronson's serum is prepared by injecting a horse with streptococcus isolated from a scarlatinal sore throat and made virulent for animals by passage through white mice. Moser's serum is said by some to have given good results. It is prepared by injecting a horse with several strains of streptococci coming from the internal organs of scarlet fever bodies. The organisms are not passed through laboratory animals before they are used in the immunization. Mendelsohn has used this serum on only four scarlet fever patients, but did not notice a marked improvement after its injection. As this series is very small, further trials with Moser's serum are indicated.

GLYCOGEN IN PATHOLOGIC CONDITIONS.

In addition to the various chemical ingredients constantly found in all animal cells, and sometimes referred to as the primary constituents, there are also secondary constituents which are not found in all cells, at least in recognizable quantities, of which perhaps the most important are fat and glycogen. Glycogen has until recently evaded successful study because it is very soluble in water, and also rapidly disappears from the cell after its death, both of which facts make it difficult to secure material in condition for examination. Methods have been devised, however, which permit of securing well-stained microscopic preparations from fresh material, and control by chemical means shows that the microscopic appearances are a reliable indication of the quantity of glycogen actually present in the tissues. During the process of evolution of these methods many and often erroneous observations and deductions have been made, which have recently undergone a clearing up at the hands of Gierke.[1] Outside of technical considerations, the glycogen question has touched on practical medicine in two chief points. The first is the diagnostic value of the occurrence of glycogen granules in the circulating leucocytes in disease; the second is the diagnostic and prognostic value of the finding of glycogen in the cells of tumors.

So far as available methods go, glycogen can not be detected in all cells under normal conditions. As is well known, it is most abundant in liver and muscle cells, after which in importance come hyalin cartilage and the middle layers of stratified epithelium. On the other hand, ordinary cylindrical epithelium, the pancreas, the nervous system, and many other organs seem quite free from visible glycogen. The usual teaching of the abundance of glycogen in fetal tissues is but partly correct; in fetal muscle it is very abundant and also in the cartilage, but during early fetal life the liver is quite free, and in other organs the amount of glycogen seems to bear no constant ratio to either the stage of development or the rate of growth.

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[1] Deut. med. Wochft., 1905, vol. xxxi, p. 461.

[1] Ziegler's Beitr., 1905, xxxvii, 502.

This idea of a relation of glycogen to cell multiplication seems to have misled earlier observers, who suggested the existence of a correlation between the amount of glycogen in pathologic tissues and the rate of their growth. For example, Brault found glycogen in all malignant tumors irrespective of nature or origin, and, believing it to vary in amount with the energy of their growth, suggested the estimation of glycogen content as a matter of prognostic significance. The most recent studies give quite different results. Glycogen is not present in all tumors by any means, nor is it an index of their embryonal nature. It is perhaps most abundant in hypernephromas, although normal adrenal tissue is free from or poor in glycogen; in squamous celled carcinomas with hornification it is also abundant, while less so in sarcomas, and altogether absent in many cylindrical celled carcinomas. Granulation tissue cells often contain glycogen and, therefore, it may be present in tubercles and gummas, but not in a manner or quantity at all characteristic or significant.

It is impossible, on these findings, to attribute the occurrence of glycogen in pathologic cells either to an embryonic condition of the cells or to their origin, and there seems to be no specific cause for such abnormal accumulation of the substance. While the circulating leucocytes frequently contain much glycogen during suppurative processes, they may react in the same way to other injuries. Likewise, a connective tissue cell in the vicinity of an abscess, a foreign body, or a tumor, may or may not take on glycogen. Gierke has made the interesting observation that the conditions under which this glycogenic infiltration occur are almost precisely those under which fatty changes are produced, and the two processes go hand in hand. For example, in an infarcted area fatty degeneration occurs in such cells as are deprived of their blood supply but which still receive some nourishment from diffusing blood plasma—that is, the cells about the periphery. Glycogen is also found in the same cells, appearing usually before the fat, which later may entirely replace it. This fatty accumulation is attributed to lack of oxygen, with resulting lack of combustion and accumulation of fat, and Gierke considers the accumulation of glycogen to be due to exactly the same cause. Glycogen is usually found only in cells with an intact nucleus—after the cell dies the glycogen disappears rapidly, although the more stable fat may remain or may even increase. Glycogen and fat often appear in the same cell, although either may occur alone. In tumors, therefore, the cells accumulate glycogen when their nutrition becomes impaired, just as they may also accumulate fat, but this tendency is more marked in some varieties of cells than in others. Glycogen granules may be found in leucocytes either because of injuries they have received while outside the vessels in areas of inflammation or other lesions, or from the effects of poisonous substances in the blood, or, perhaps more important, from toxic injuries to the bone marrow.

From the results of the work so far performed, it may be considered that the glycogen content of tumor cells is without value as an indication of malignancy, and that glycogen accumulation within leucocytes is produced under such various conditions and in such varying amounts by similar causes as to render it of very questionable diagnostic importance.

STATISTICAL INVESTIGATION OF CANCER.

Recently there has appeared, by Drs. Bashford and Murray of England, an interesting and valuable report on the statistical investigation of cancer, published as one of the scientific reports of the Imperial Cancer Research Fund, under the direction of the Royal College of Physicians of London and the Royal College of Surgeons of England. This work represents the accumulation of a large amount of statistics and has been made possible through the collaboration of the authorities of the metropolitan hospitals, the general registrar's office, various hospitals in Ireland, the officers of the Indian and colonial medical services and also members of the veterinary profession, as well as many public and private individuals.

Through the compilation many valuable and new facts appear which will at least modify our views on some phases of the cancer question.[1] A few of these may be briefly noted:

One important indication from this study is that sarcoma increases in frequency as life advances in much the same way as that long recognized for carcinoma. This fact might suggest that the two types of growth may not be so fundamentally different as often considered. Another suggestive fact derived from a study of the age incidence in man indicates that the age period at which cancer appears in those organs in the human body which disappear early or are active throughout life presents a general parallel to the incidence of the disease in animals with short and long lives. Furthermore, the accumulated data on the frequency of cancer in animals indicate, when age is taken into account, that they are as liable to the disease as man, and that the time at which new growths appear in animals stands in direct relation to the absolute duration of life in long- and short-lived animals.

A study of the cancer question in native races has brought out certain points worthy of mention. While the data as yet are somewhat limited, still those so far collected indicate the occurrence of cancer among all the races and under all climates throughout the empire; and the report further states that there is no reason to anticipate that any race of mankind is absolutely exempt from the disease. The races include those of Malta, Fiji, British Guiana, West Indies, and others remote from civilization. The further interesting fact is brought out that diet exerts no influence on the occurrence of new growths, for just as they are found in both herbivorous and carnivorous animals so they are found likewise in those races whose diet is restricted to either vegetable or animal food, as well as to those that subsist on a mixed diet.

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[1] They use the term cancer to include all forms of malignant new growths.

Attention is called to the importance of exercising caution in the interpretation of statistics from localities without taking into consideration the age incidence of cancer. In this way the existence of endemic centers have been thought to occur simply because the total number of individuals and their average age has not been taken into consideration.

Statistical studies of this sort, while not intended, of course, as a means of determining the nature or origin of cancer, are, however, of inestimable value in controling the conclusions derived in other ways, and they may also serve to indicate new and more favorable points of attack.

THE YELLOW FEVER EPIDEMIC.

New cases in New Orleans are not being quite so rapidly reported, and the mortality rate is steadily falling. Despite its noisy quarantine, Mississippi has some cases that have been concealed since July 20. Harsh quarantine regulations are causing widespread misery, while some enlightened communities have stamped out fever without restricting travel. It has been suggested, wrongly it is hoped, that most of the shotgun quarantines will come down when local merchants have disposed of their stocks at famine prices. If these quarantines are, indeed, mercenary in motive rather than due to cowardice and ignorance of rational methods of preventing disease, they mark one of the lowest depths of human depravity. On the Louisiana plantations the disease is finding ideal conditions for rapid spread, and the authorities find therein some of their greatest difficulties. Despite a few shortcomings, the campaign in the city of New Orleans is being valiantly fought and with real success, which will soon begin to show more graphically in the statistics. Over 40 officers of the United States Public Health and Marine-Hospital Service are now on duty in the infected area, and two have contracted the disease. While the Southern rail gateway into Illinois is being closely guarded, a few cases have developed in northern Missouri near the Iowa line and just across the Mississippi from Illinois. If the disease once obtained foothold in southern Illinois, it probably would be difficult to eradicate, if the stegomyia exists there in sufficient number, as the conditions are very difficult for effective sanitary work. The latest news from the scene of the epidemic continues to be encouraging. For instance, in New Orleans the cases that have occurred in the best quarter of the city, that above Canal street, have been mild and so far have not given rise to secondary cases. In other words, among the better classes the disease does not spread when the cases are properly cared for. Unquestionably the epidemic is checked, but continued hard work for three or four weeks yet will be necessary to show whether it can really be stamped out before frost kills the infection-bearing mosquitoes. While physicians hope for this, it will be highly satisfactory if modern methods do no more than cause the number of cases steadily to dwindle.

ETHICS IN THE COUNTY SOCIETY.

The peccadillos of a member of a county society, especially in the smaller communities, are pretty sure to be known to the other members. Very often the offending one in the little matters of professional conduct is guilty by reason of defective training and faulty early environment. Many an offender will cease his disturbing practice if the facts in their true light are kindly and tactfully laid before him. In other words, it should be the function of the county medical society to educate its members in professional conduct, and to avoid, so far as possible, trials and penalties. Rarely is there a society not numbering on its rolls at least one member capable of successfully playing the part of reformer and peacemaker. To him should be allotted the task of censor. Many an offender against professional courtesies and customs will agree to observe all the proprieties if he be properly approached. To begin an effort at reform by bringing charges against the culprit and hailing him before a trial committee does not offer the least hope of making him a better man. For instance, through ignorance or thoughtlessly, a physician occasionally permits himself to advertise in a way that offends his fellows. To win such a man over to the cause of clean medicine, charges and a trial are wholly ineffective, while in a majority of such instances private and kindly moral suasion will accomplish that end by making such a one desire to stand clean among his fellows. To this end organization in itself is a great first step. The society germinates and fosters a sense of professional pride. These things are not simply desiderata of the future. In many places they are long-established facts. Here and there over the country well-organized county societies have been blessed with members who love peace and who are willing to expend effort to rescue a misguided colleague. These men have not been so few as might be thought from the little we hear of them. Let us do away with unnecessary criticism of each others acts and have more peace conferences and fewer battles.

THE ELIMINATION OF THE MOSQUITO.

On page 585 of this issue of The Journal, Dr. Doty discusses the possibility of getting rid of that almost universal nuisance, the mosquito. It is only of late years that the habits of the insect have been carefully studied with a view to its extirpation, and yet there is much room for further knowledge which Doty points out will probably be gained by investigations now in progress. We know enough, however, to relieve ourselves, to a large extent, of the danger and discomfort caused by these pestiferous insects. The success of mosquito-killing methods in Havana and in some places along our Atlantic coast is a very encouraging indication of what is possible with well-directed systematic effort. If we had been more observing in years past, we should probably have seen the connection between the decrease of malaria and of mosquitoes in many sections of our country. It is a well-known fact that, with cultivation and drainage, malaria disappeared in extensive regions of the Middle West, but the coincident disappearance of the mosquito to any extent whatever was overlooked. Whether it will ever be possible completely to eliminate the danger from the mosquito in tropical regions with heavy rainfall is, perhaps, doubtful. We may have to rely largely on the quinin saturation method of Koch in many localities, but a great deal can undoubtedly be done. The fact that the mosquito is so much a home dweller, seldom going far from its place of origin, is a very important one, but its conveyance by steamers, railroad trains and other methods of rapid transit makes any disease of which it is the host more and more a world peril. The opening of the Panama canal may be, as some fear, the cause of the introduction of yellow fever into the Orient, and it is to be hoped that by the time that work is achieved the mosquito question will be more a matter of human control than it is at the present time. The stegomyia is apparently a cosmopolitan resident within certain degrees of latitude, a fact which involves very unfortunate possibilities if we fail to obtain a more perfect control of its migrations than we seem to have at present. The situation, however, is far more encouraging than it was as regards the possible propagation of yellow fever, notwithstanding recent developments. We have probably not yet learned all the iniquities of the mosquito, and it would be well if a still more general campaign of popular education were carried on against it.

UNCINARIASIS IN CALIFORNIA.

Dr Blumer's address on tropical diseases at the Portland session of the Association has apparently received a rather striking illustration from conditions existing in San Francisco. It is stated by the San Francisco *News Letter* that out of 115 Porto Ricans examined in that city recently, over 60 per cent. were found to be suffering from uncinariasis, and it is probable that this apparently represents the condition of the hundreds not examined. The infection seems to be fairly introduced and while it is not probable that the evil prognostications of the newspaper will be fully realized, the matter is one that deserves some public attention. The climate of California is not unfavorable to the spread of the disease and while it is not common in cities, if it should extend among the truck gardeners near San Francisco, there may be possibilities of evil to be considered.

UNWISE AND UNTIMELY EXPERIMENTATION.

It has almost invariably occurred in the history of epidemic diseases that "sure cures" are suggested, sometimes with considerable vehemence, by individuals of more or less scientific attainment, which do not stand the test of scientific investigation or experience. The present yellow-fever situation in New Orleans has been no exception to this rule, and the newspapers of the last few days have been full of notices of the prophylactic arsenic treatment of yellow fever advocated by Dr. R. B. Leach of St. Paul, Minn. According to the newspapers, he claims that the ingestion of one grain of arsenious acid in 1-100 grain doses, or continued until the epidemic ends, will render the individual immune from yellow fever. Incidentally, it is reported that thousands of boxes of arsenious acid tablets have already been sold to citizens of New Orleans. The employment of arsenic is not new. In the form of cacodylic acid (dimethylarsinic acid), as mentioned in The Journal, Aug. 17, 1901, arsenic acts "by stimulating the reproduction of cells, increasing the number of red blood corpuscles, rejuvenating the tissues and conferring on the economy an extraordinary degree of resistance to morbid influences." Dr. Leach claims that he is cognizant of from 16,000 to 20,000 tests of arsenization in yellow fever, but that these tests were made before the stegomyia had been taken into consideration. The well-known alterative properties of arsenic led to its use in yellow-fever epidemics in Brazil five years ago, and a monograph on the subject was written by Dr. Eduardo Magalhaes, a member of the Brazilian Yellow-fever Commission. If Dr. Leach's claims are valid, why were not reports made through accredited medical channels, and why has he delayed until now, in the midst of an epidemic, to give forth to the world the results of his experience and experiments? Under the conditions which at present prevail in New Orleans, the promulgation of any theory of this kind, not based on scientific principles, is dangerous to those who follow it and to others, because those who have implicit faith in the theory will not pay the proper attention to the cleaning of their premises, to the screening of their cisterns, to the oiling of places where mosquitoes might breed, and to other prophylactic measures. While Dr. Leach undoubtedly is single-minded in his advocacy of arsenic as a prophylactic of yellow fever, and while he is undoubtedly honest in his offer to submit himself and others to the test of inoculation after arsenization, he is gravely in error in making the claims he does for a procedure which is nothing more than empiric, and the following out of which, to the exclusion of approved hygienic measures, must entail grave danger to the community at large.

THE ANNUAL RAILROAD HOLOCAUST.

While few of the vast number of persons carried on American railroads suffer death or injury, the actual casualty figures are appalling. Undoubtedly the accidents of travel in America are excessive. Comparison with the casualty statistics of British railroads has so often been made that there is no need to reproduce the figures, but they are decidedly unfavorable to the railways of the United States, even though the British roads are more crowded and pass through more closely built up territory. Speed is not a factor, as there is no preponderance of accidents to the faster trains and as Great Britain has proportionally more fast trains than the United States. The annual report of the Interstate Commerce Commission for 1904, issued Aug. 16, 1905, presents the following alarming figures, to which are added for comparison those of the previous year:

	1903.	1904.	Increase per cent.
Passengers carried	694,891,535	715,419,682	3
Number of employes........	1,312,537	1,296,121	—1¼
Deaths	3,554	10,046	183
Non-fatal injuries.........	45,977	84,155	83
Passengers killed	321	441	37
Passengers injured	6,973	9,111	31
Employes killed	3,233	9,605	197
Employes injured..........	39,004	75,044	92
Passengers killed, 1904, to passengers carried as 1 to			1,622,267
Passengers injured, 1904, to passengers carried as 1 to			78,523

The statistics for years prior to 1903 exhibit, on the whole, a steady increase in tragedy. The figures are presented for information and for study. It is not in the province of medical men to ascertain the cause of this disgrace of American railroading nor to prescribe a remedy. Those functions are left to railroad men and lawmakers, with the assurance that there is herein plenty of work for both. The report shows that the installation of life-saving devices, such as automatic couplers, automatic signals, air brakes and safety switching devices, has progressed satisfactorily. Why, then, 37 per cent. increase in passengers killed and 197 per cent. in employes killed? The pages of railway journals will be scanned eagerly for a satisfactory reply. Are British railway employes of a higher grade? Are the railways of the United States not enforcing the rules that most of them have against intemperance among employes? Are dividends on watered stock given preference over expenditures for rigid and genuine "block system," elevated ways in cities and ample switching facilities? We can only ask questions. Physicians know, however, that a certain proportion of all sorts of accidents are due to the sudden onset of peculiar morbid mental states in those entrusted with hazards. This subject, in the light of the statistics here presented, demands a close and scientific investigation. Much useful effort is constantly applied to the mechanical problems of railroading, and improvements in this direction seem fully abreast of the times; but there is a most lamentable lack of any satisfactory study of the employes, i. e., of the psychology of railroading.

SMOG.

At a recent health congress in London, a member used a new term to indicate a frequent London condition, the black fog, which is not unknown in other large cities and which has been the cause of a great deal of bad language in the past. The word thus coined is a contraction of smoke fog "smog"—and its introduction was received with applause as being eminently expressive and appropriate. It is not exactly a pretty word, but it fits very well the thing it represents, and it has only to become known to be popular. London is undoubtedly the proper place for its coinage, for it is said to surpass all other places in the opacity of its smog, but so far as mere darkness is concerned some other British and American cities would afford ample justification for the use of the term.

THE PERILS OF THE LUNG TESTER.

In all our large cities there are many slot machines which, while morally innocent, have serious sanitary drawbacks. We refer to the lung testing apparatus that are found in places of amusement, saloons, etc. From a sanitary point of view there are few such appliances that are more objectionable and it is not necessary to specify why such is the case. We have not heard, however, of any general crusade against their use excepting in the city of Montreal where, though suppressed by the health authorities some years since, they have again crept in and become an insanitary nuisance calling for renewed action by the board of health. While it may seem desirable to some occasionally to test their lung capacity on these public machines, a little of the enlightenment that is going round in regard to tuberculous and other infections might be more properly applied to them than to public telephones and other comparatively innocent, but possibly or remotely dangerous apparatus.

Medical News

ALABAMA.

Hospital Reopened.—The City Hospital, Huntsville, which has been closed several months for repairs, was reopened August 15.

Hospital Company Organized.—The Union Street Private Hospital Company of Selma was organized August 9, with a capital stock of $10,000 and the following officers: Dr. Samuel G. Gay, president; Dr. John N. Furness, secretary, and Dr. Barney B. Rogan, treasurer.

Fined for Illegal Practice.—Dr. Thomas P. W. Brooks, Hackleburg, professing to be a graduate of the Georgia College of Eclectic Medicine and Surgery, was found guilty of practicing without a license, fined $25 and costs, and prohibited from practicing until he obtained a license.

Hospital Staff Elected.—The following visiting staff has been selected for St. Margaret's Hospital, Montgomery: Gynecology—Drs. Robert N. Pitts, Arthur H. Montgomery, G. J. Griel and J. H. Blue; surgery—Dr. Robert Goldthwaite, J. Norment Baker, William H. Hudson and Samuel A. Billing; medicine—Drs. Joseph L. Gaston, Milton L. Wood, John M. Sadler and Wooten W. Wilkerson; eye and ear—Drs. Paul S. Mertens, Charles A. Thigpen, William G. Thigpen, George A. Dennis and Henry S. Persons; pediatry—Drs. Charles T. Pollard, Forney C. Stevenson, Milton B. Kirkpatrick and Frank H. McConnico; genitourinary—Drs. Gibson Reynolds, Louis D. Robinson and H. T. Lay; pathology—Dr. Thomas C. Thorington, and advisory board—Drs. Charles A. Thigpen, chairman; J. Norment Baker, secretary; Joseph L. Gaston, Wooten M. Wilkerson and Robert Goldthwaite.

Personal.—Dr. Joseph D. Heacock, Birmingham, has been appointed a member of the health board of the Jefferson County Medical Society.——Dr. William W. Harper, Selma, is ill with typhoid fever.——Dr. William D. Pettus, Republic, who has been seriously ill for two months, is improving.——Dr. Wilbur F. Sadler, Montgomery, in a "personal difficulty" August 6, cut W. R. Barrett in the left temple. The wounds "are not regarded as at all fatal."—Dr. R. C. Woodson, Birmingham, has returned from Europe.——Dr. Wallace R. Bishop, Talladega, has been elected a member of the board of censors of the Talladega County Medical Society, vice Dr. T. Caffrey, removed to Dallas County.——Dr. Samuel H. Lowry, Huntsville, was stricken with paralysis July 6.——Dr. John D. S. Davis, Birmingham, has had conferred on him the degree of LL.D. by the Southwestern University, Jackson, Tenn.

ARKANSAS.

Van Leer Acquitted on Technicality.—Dr. Samuel C. Van Leer, Hot Springs, who has been under the ban of the Federal Medical Board and in trouble with the United States courts, because he prescribed hot-water baths not in accord with the regulations of the reservation, was acquitted on a technicality of procedure, August 7.

The State Board.—Drs. John W. Meek, Camden; William Crutcher, Pine Bluff, and Oscar E. Jones, Newport, are the newly appointed members of the State Board of Medical Examiners. The board reorganized July 11 and elected the following officers: President, Dr. M. L. Norwood, Lockesburg; vice-president, Dr. George V. Poyner, Green Forest; secretary, Dr. Joseph P. Runyan (re-elected), and treasurer, Dr. Ben L. Harrison, Jonesboro.

The "Drumming" Evil.—A plan is being devised by which a warning circular as to doctors' drummers may be distributed on all incoming trains by an officer under the direction of the mayor of Hot Springs. The Business Men's League is taking up the matter with the city authorities, with a view of determining the advisability of such steps.——On August 3 Alva Moore was arrested on two complaints of drumming for the Helena flats.——T. W. Standford, who was arrested on July 7, charged with a similar offense, was acquitted.

CALIFORNIA.

Manson Gives Lane Lectures.—Sir Patrick Manson, commenced the course of nine Lane lectures at Cooper Medical College, San Francisco, August 14.

Rapid Work on Hospital.—Two of the six buildings which are to make up the Merritt Hospital, Oakland, will be ready within three months. One of these is an operating pavilion, and the other a ward building three stories high.

Personal.—Dr. Stanley P. Black has been elected secretary of the Pasadena Board of Health and health officer.——Dr. Ruth A. French, Petaluma, was kicked by a horse, August 2, and sustained a fracture of the skull.——Drs. Francis M. Pottinger, Los Angeles, and George H. Evans, San Francisco, have been appointed delegates to the International Tuberculosis Congress.

Soon Loses License.—Dr. James V. Calhoun, San Francisco, recently graduated from Cooper Medical College, had his license cancelled by the State Board of Medical Examiners, August 2. It was alleged that Dr. Calhoun had advertised by means of a printed card as a private specialist, offering consultation and examination free. It was also alleged that his card contained a "grossly improbable statement."

Joint Sanitarium for Consumptives.—County Physician C. E. Stone, Marysville, proposes that steps be taken to unite with other counties of northern California and establish a joint sanatorium for indigent patients afflicted with consumption. His idea is to have the counties divide the cost of maintaining the institution, and that each send to it such patients as would otherwise be kept in separate county hospitals. By the present system such patients can not be isolated, and are allowed to mingle freely with other patients, some of whom are confined to the hospital only temporarily.

License Trials.—Dr. Walter E. Lilley, Merced, charged with practicing without a city license, was discharged August 10. ——Rudolph H. Garber, San Francisco, was arrested August 12, charged with practicing medicine without a license.——Dr. F. P. N. Van Handghen, Watsonville, was arrested for illegal practice July 18.——Fraud orders were issued July 18 against "Drs." R. Brook Sterling and R. H. Weston, San Francisco, for illegal use of the mails.——"Dr." T. J. Batiere, San Francisco, for whom a warrant was issued July 26, has fled from the city.——"Dr." S. Eve, Watsonville, under indictment for illegal practice, has left the state.——"Drs." Frank Watson and Josefa Dean of Watsonville have been arrested, charged with practicing medicine without a license.——"Dr." G. G. Sanchez, Bakersfield, is awaiting trial for alleged practice without license.——Warrants were issued for the arrest of three Chinese doctors of San Francisco, Tom She Bin, Tong Po Chy and Wong Him, on August 5.

COLORADO.

A New Sanatorium.—Dr. Henry B. Oertel has opened a sanatorium in Pueblo, thoroughly equipped for the care of obstetrical and surgical cases.

Personal.—Dr. Miller E. Preston has been appointed police surgeon of Denver, vice Dr. Francis E. Prewitt, resigned.—— Dr. Maurice Kahn, Leadville, has been appointed captain and assistant surgeon, N. G. Colo.

Correction.—Dr. William W. Bredin asks that the statement in The Journal of July 8 (page 110), be corrected. He gives the following as the facts in the case: "The city council of Denver has recently passed an ordinance to the effect that if a physician has no cases of confinement, he must send in a monthly report to that effect. I did not attend any cases of confinement during the month of May, and I failed to state that fact as many others did promptly on the first of June. . . . I was not fined . . . for not sending or reporting any birth, neither was I fined at all."

DELAWARE.

Personal.—Dr. William Marshall, Jr., has been appointed resident physician at the Delaware Hospital, Wilmington.

Unlicensed Practitioner Fined.—Charles M. Suit, Wilmington, accused of practicing medicine without a license, compromised by agreeing to refund money to persons he had been treating for cancer, and paying a fine for peddling without a license. He then left Wilmington.

Typhoid Fever in Wilmington.—An epidemic of typhoid is threatened in Wilmington, 41 cases having been reported, with, however, but few deaths. The outbreak is attributed to the pollution of the Brandywine River, from which the city receives its supply of drinking water, at West Chester and other places in Chester County, Pa.

DISTRICT OF COLUMBIA.

Personal.—Dr. William M. Sprigg has been appointed a member of the Board of Medical Examiners, vice Dr. Joseph Taber Johnson, who declined reappointment.——Dr. Frank P. Vale, police surgeon, has resigned.

Beginning of New Freedmen's Hospital.—On August 4 the first stake marking the site of the new Freedmen's Hospital, for which Congress appropriated $300,000, was driven by the superintendent, Dr. William A. Warfield.

Fined for Non-Appearance.—Drs. D. Percy Hickling and Frank P. Vale, were each fined $25 and costs for contempt of the Supreme Court of the District of Columbia, the contempt lying in their failure to appear after having been subpoenaed to testify in lunacy cases.

Typhoid in Washington.—The outbreak of typhoid fever in Washington is said to be greater in severity than any preceding epidemic, even the notable one of 1903. Since July 1 more than 300 new cases have been reported. It is stated that the new filtration beds would be ready August 19, and that after that date pure water would be supplied to the city.

ILLINOIS.

New Hospital Dedicated.—The Evangelical Lutheran Hospital at Granite City, erected at a cost of $40,000, and having accommodations for 96 patients, was formally dedicated August 13.

Princeton Hospital.—The Princeton Hospital and Sanitarium, which has been closed for a time, has been purchased by Dr. Matthew H. Blackburn and will soon be thrown open to the public.

Chooses Hospital Staff.—The board of Lakeview Hospital, Danville, met August 7 and elected the following staff for the coming year: Medical—Drs. Elmer B. Cooley, Henri S. Babcock, Abraham L. Fox, Francis W. Barton and Fred Baumgart, Danville; Dr. Jesse H. McIntosh, Vermilion Heights, and Dr. Jacob G. Fisher, Catlin. Surgical—Drs. William A. Cochran, Thomas E. Walton, A. Merrill Miller, Charles E. Wilkerson, Stephen C. Glidden and George L. Williamson, Danville; and eye and ear, Dr. Elbert E. Clark, Danville.

Chicago.

Home from Europe.—Drs. James B. Herrick and Henry Harms have returned after a summer in Europe.

Laboratory Moves.—The demolition of the county building has necessitated the transfer of the municipal laboratory to temporary quarters at Michigan Avenue and Fourteenth Street.

The Weekly Mortality.—The deaths for the week ended August 19 numbered 577, an increase of 38 over the previous week and of 140 over the corresponding week of 1904. Acute intestinal diseases caused 145 deaths; violence, 69; consumption, 46; nephritis, 35; nervous diseases, 33; heart diseases, 31, and cancer, 26. Among the important causes of death showing decreases are apoplexy and heart diseases, each 6 less; bronchitis and sunstroke, each 3 less; acute intestinal diseases, 55 less, and pneumonia, 14 less. Among those showing an increase are Bright's disease, 5; consumption, 10; cancer, 4; nervous diseases, 16; whooping cough, 4.

IOWA.

Sanitarium Opened.—Maple View Sanitarium, West Union, has been opened recently under the management of Drs. Frank B. Whitmore and Allen G. Rennison. The sanitarium has accommodations for 12 patients and is the only hospital in Fayette County.

It Costs to Be an Itinerant.—The Dubuque city council has amended the present ordinance by fixing the license for traveling doctors at $5 a day straight. If the doctor carries a band or concert company $10 a day extra will be charged for the first day and $5 for each subsequent day.

Hospital Accepts Conditions.—The Council Bluffs Woman's Christian Association has accepted the gift of $40,000 offered by J. D. Edmundson, Des Moines, under the conditions that the new hospital should be known as the Jennie Edmundson Memorial Hospital, in memory of his deceased wife; that the association provide a site and secure an additional $10,000.

KENTUCKY.

Off for Europe.—Dr. John D. Maguire, Lexington, sailed for Europe, July 22.——Dr. Stephen Sharp, Jr., Covington, sailed for Europe, August 6.

Kentucky Graduates.—On July 12 a class of 48 was graduated from the Kentucky School of Medicine. Dr. William H. Wathen delivered the announcement, and John H. Leathers conferred the degrees.——Kentucky University Medical Department graduated a class of 58, June 30. Rev. E. L. Powell delivered the doctorate address and Dr. Joseph B. Marvin conferred the degrees.——Dr. James M. Bodine delivered the faculty valedictory at the graduating exercises of the University of Louisville Medical Department, June 29, when a class of 25 received diplomas from Hon. Theodore L. Burnett.——Hospital College of Medicine, Louisville, graduated a class of 89, July 3. Addresses were made by Dr. Thomas Hunt Stucky and Dr. J. H. Blanton.

Sues State Board.—Dr. Samuel J. Fryer, Louisville, has entered suit against the State Board of Health to compel that body by mandatory injunction to issue him a certificate to practice medicine. He claims that he graduated from the Hospital College of Medicine and applied to Dr. W. H. Wathen, the county referee, for a certificate in July, 1903, and presented his diploma. He made a second application in January, which was also refused. The plaintiff claims that he graduated before the law requiring examinations went into effect, though after it was passed. For this reason he contends that he should not be subjected to the examination. Another member of the same class, it is said, recently sued the board and received his certificate.

MARYLAND.

Money for Hospital.—Toward building the proposed Union Hospital of Cecil County at Elkton, $4,500 of the $5,000 required to secure an appropriation from the state, has been obtained.

Smallpox.—The outbreak of smallpox in Calvert County is said to be limited to three cases on Fishing Creek, near Pushaw Station, on the Chesapeake Beach Railroad, who are under the care of Dr. J. L. Brayshaw, Friendship.

Fail to Report Tuberculosis.—There is much complaint by the State Board of Health that physicians fail to report cases of tuberculosis. This is pretty general throughout the state, notwithstanding the law passed at the last legislature requiring reports, and affixing a penalty of $100 fine and not exceeding six months' imprisonment, one or both, in the discretion of the court, for its violation. Publicity in such cases is forbidden. The secretary of the board declares his intention of enforcing the observance of the law.

Baltimore.

Pharmacist Dies.—Charles Schmidt, associate professor of pharmacy, University of Maryland, died August 14 from typhoid fever. He was director of the laboratories of Messrs. Sharpe & Dohme.

Personal.—Dr. Henry M. Hurd of the Johns Hopkins Hospital has gone to the Adirondacks for the remainder of August. ——Dr. William Sidney Thayer has gone to Cape Breton for the remainder of the summer.——Dr. Gordon Wilson has gone to North Hatley, Canada, for some weeks.——Dr. William M. Dabney has gone to Portland.——Dr. William M. Welch is in Paris.——Drs. James Bosley, John B. Schwatka and J. D. Norris have gone to the Antlers, I. T., where they will spend three weeks in hunting big game.——Dr. George A. Fleming is at Bar Harbor, Maine.

NEW YORK.

Attempt to Bribe Inspector.—Dr. William S. Goodale, Buffalo, tenement house inspector, accuses an owner of a tenement house with having offered him a bribe of $25 provided that he failed to report violations of the tenement house ordinance.

Improving Nassau Hospital.—This institution, located at Mineola, L. I., will be provided with a children's ward, diet kitchen, dressing room and more private rooms by Mrs. W. K. Vanderbilt, Jr. The addition will be about as large as the present building, and the ground has already been broken.

Organize Medical Library Association.—Physicians of Jamestown have organized this association to maintain a library at the W. C. A. Hospital. Dr. Era M. Scofield was elected president; Dr. Jane L. Greeley, vice-president; Dr. John W. Nelson, secretary, and Dr. John H. Wiggins, treasurer.

New York City.

Personal.—Dr. Henry Belt was thrown from his carriage in an accident at Narragansett Pier, R. I., breaking his arm and sustaining several lesser injuries.

New Tuberculosis Camp at Coney Island.—The system of treatment which is being carried on is the same as that used at Sea Breeze House. This is a summer hospital for the treatment of surgical tuberculosis, and was opened under the direction of Dr. Napier. Twelve children suffering from various forms of bone tuberculosis are now being treated in the hospital, which is a tent on the grounds of the reception hospital.

Examine Subway Air Again.—A large assortment of samples of subway air has been collected from different portions of the subway and from the basements of department stores, factories, tenements, etc., which Dr. George A. Soper, consulting sanitarian of the Board of Health, is analyzing for the purpose of ascertaining the relative conditions of the atmosphere in these various localities. Dr. Soper will make a definite report in about two weeks.

Healer Fined and Jailed.—For swindling poor folk of the East Side, posing as a physician, "healer of the sick," Alfred Meyer, a former convict, was sentenced August 4 in the Court of Special Sessions to eleven months in the penitentiary on Blackwell's Island, and to pay a fine of $500 or to serve in prison one day for each dollar not paid. There were more than 500 complaints against Meyer, of which the chief probation officer said he had personally investigated 150 and found their stories true.

Fight Over Bellevue Bids.—An application to make permanent a temporary injunction granted by Justice Amend restraining the trustees of Bellevue Hospital from awarding the contracts for pavilions A and B of their new building was heard by Justice Dowling in the Supreme Court. The action was brought by a taxpayer, who sets up the claim that the work was awarded to one who had not made the lowest bid and also because it was not made at the regular time and place of meeting of the board of trustees.

Typhoid Fever Spreading.—This disease is spreading in both Manhattan and Brooklyn. From August 12 to August 18 148 cases were reported to the Health Department. Of the new cases 27 were in the Bath Beach district. The reports from this district have not been in the least exaggerated. Policemen have been stationed at the bathing houses in the neighborhoods of the outlets of sewers, to warn people away, as it seems almost certain that some of the cases are due to bathers carelessly swallowing water in this vicinity.

Bakers' Strike and Tuberculosis.—As a result of the strike among the Kosher bakers on the East Side the Board of Health has made an investigation and issued the following statement: "While tubercle bacilli may be present on the hands of the bakers and be mixed with the dough, yet they are almost certainly killed during the process of baking. This destruction is still further insured by the bread being in the moist state. It is remarkable that among 2,400 patients applying for treatment at the tuberculosis clinic of this department from March 1, 1904, to March 1, 1905, not a single one followed the baking trade."

Many Diseased Children.—The Health Department, under the direction of Dr. Biggs, just completed an important investigation into the health of some of the school children of this city. Out of 13,941 children in four primary schools, 6,294 required medical attention for some abnormal condition. They were all in poor quarters, but the worst quarters for disease were avoided in order that the results might be taken in general. The complete result is as follows:

Bad nutrition	1,092
Swelling in anterior glands	2,604
Swelling in posterior glands	706
Chorea (nervousness)	136
Cardiac disease	232
Pulmonary disease	204
Skin disease	227
Deformity of spine	118
Deformity of chest	162
Deformity of extremities	210
Defective vision	3,219
Defective hearing	460
Nasal breathing	1,623
Bad teeth	3,314
Deformity of the palate	196
Bad mentality	823
Requiring medical attention	6,294
Total number examined	13,941

Contagious Diseases.—For the week ended August 5 there were reported to the sanitary bureau 402 cases of tuberculosis, with 141 deaths; 223 cases of measles, with 8 deaths; 193 cases of diphtheria, with 21 deaths; 122 cases of typhoid fever, with 13 deaths; 47 cases of scarlet fever, with 1 death;

24 cases of cerebrospinal meningitis, with 12 deaths; 3 cases of smallpox, with 1 death, and 17 cases of varicella.——For the week ended August 12 there were reported 421 cases of tuberculosis, with 165 deaths; 254 cases of typhoid fever, with 26 deaths; 178 cases of measles, with 9 deaths; 177 cases of diphtheria, with 25 deaths; 26 cases of cerebrospinal meningitis, with 19 deaths; 37 cases of scarlet fever, and 12 cases of varicella.

OHIO.

Cincinnati University.—At the request of the medical directors of the City Hospital the Board of Public Service adopted a resolution that hereafter the professor of pathology of the Cincinnati University shall be the head of the pathologic department of the hospital. The directors stated that they had been made convinced of the fact that a professorship of pathology would soon be added to the university staff.

Personal.—Dr. George Fisher, formerly physical director of the Cincinnati Y. M. C. A., has resigned his position of physical director of the Brooklyn Y. M. C. A. in order to become one of the general secretaries of the national committee of the association. He is spending a few weeks in Cincinnati before going to California to strengthen the organization in that state.——Dr. Eugene S. May, Cincinnati, has been appointed local surgeon for the B. & O. S. W. R. R.——Dr. W. Burnett Weaver, chief surgeon of the Cincinnati Traction Company, has resigned, and sailed for Europe, August 16.——Dr. Clyde R. McKinniss, Marion, has been appointed to the staff of the Columbus State Hospital for the Insane.——Dr. Sterling B. Taylor, Columbus, was detailed as surgeon to Troop B, during camp, from July 30 to August 6.——Dr. Frank Winders, Columbus, secretary of the Ohio State Board of Medical Examination and Registration, has tendered his resignation, to take effect Jan. 1, 1906, on account of the increased duties consequent on his election as secretary of the Ohio State Medical Society and editor of the *Ohio State Medical Journal.*

PENNSYLVANIA.

Typhoid in Allegheny.—There are at present 76 cases of typhoid fever under treatment in hospitals in Allegheny. The number of cases not in hospital is estimated by the Pittsburg *Dispatch* at 1,520. Meanwhile the superintendent of the local health board is said to deny the presence of the disease in the city.

Personal.—Dr. William N. Stein, Shenandoah, sailed for Glasgow on the *Astoria,* August 5.——Capt. Louis P. McCormick, Connellsville, has been appointed major and surgeon, N. G. Pa., and assigned to the Tenth Infantry, and Dr. James F. Elder, Beaver, has been commissioned first lieutenant and assistant surgeon in the same command.

Typhoid Fever at Dundaff.—Dr. Dixon, state health commissioner, has detailed Dr. Fred C. Johnson, chief medical officer of the State Department of Health, to make an investigation into the cause of the typhoid fever epidemic at this place, and to institute measures to prevent its spread. Dr. George Fox of Philadelphia will assist Dr. Johnson with the work.

Philadelphia.

Personal.—Dr. C. Albert Bigler, Jr., sailed for Europe on the *Etruria,* August 19.——Dr. J. Howard Taylor, assistant medical inspector in the Bureau of Health, who was rather severely injured by a fall August 16, is rapidly recovering.——Dr. Richard F. Woods was severely burned by the explosion of the gasoline tank of his automobile August 13, but is now recovering from the injury sustained.——Dr. Alfred Stengel, chief of the medical staff of the University Hospital, is confined to that institution with an acute intestinal affection. He has not typhoid fever, as was first reported.

Food Commission's Busy Month.—Since the middle of July Dr. B. F. Warren, state food commissioner, and his assistants have arrested 112 dealers in this city, charged with adulterating food products. All have had a hearing and have been returned to court for trial. The cases only covered five products, namely, 20 milk cases, 19 for alleged adulteration of chocolate cake, 2 for candy, and 9 on the charge of selling adulterated preserves and jam. So far this month there have been 19 cases of alleged adulteration of cake, 1 candy, 5 preserves and 37 on the charge of selling adulterated soft drinks.

Health Report.—The total number of deaths reported for the week aggregated 438, the same as for last week. The deaths in the corresponding week of 1904 aggregated 420. The principal causes were: Typhoid fever, 11; whooping cough, 4; cerebrospinal meningitis, 2; tuberculosis, 42; cancer, 30; diabetes, 3; apoplexy, 22; heart disease, 30; acute respiratory disease, 16; enteritis (under 2 years), 73; enteritis (over 2 years), 13; Bright's disease, 35; railroad injuries, 6; marasmus, 11. There were 185 cases of contagious diseases reported, with 14 deaths, as compared with 152 cases and 19 deaths for the preceding week. There were 125 cases of typhoid fever reported, with 11 deaths, as compared with 100 cases and 14 deaths for the previous week. It will be noted therefore, that typhoid fever is on the increase, though the malady is of a mild type and the mortality relatively low.

GENERAL.

Personal.—Dr. Joseph Ford, United States Army, who has been stationed in Oklahoma, was operated on for appendicitis at the General Hospital at the Presidio, San Francisco. As soon as he has recovered he will go to the Philippines for duty.

May Have Cure for Leprosy.—A later report is given out concerning the cure for leprosy which physicians in the Philippines are said to have discovered. The report states that 25 patients have been treated; of these 6 are reported as being absolutely cured while the others have been benefited. No official statement is received.

American Electrotherapeutic Association to Meet.—The fifteenth annual meeting of this association will be held at the New York Academy of Medicine, New York City, September 19-21. The program includes papers on all branches of electrotherapeutics, including the treatment of cancer and other malignant growths, tuberculosis, syphilis, gonorrhea, etc., by various forms of electricity, radium and its therapeutics, manual therapy, mechanical vibration, etc. Authors of papers include Drs. Rockwell, Cleaves, Massey, Granger, Baer, Snow, Reyburn, Kassabian, Stover, Gibson, Lindsay, Curtis, Roberts, Herdman and Deeks. The secretary is Dr. Clarence Edward Skinner, 67 Grove Street, New Haven, Conn. The chairman of the committee on arrangements is Dr. Morris Weil Brinkmann, 54 West Ninetieth Street, New York.

Mortality on Shipboard Among Immigrants.—Dr. E. T. Chamberlain, chief of the Bureau of Navigation of the Department of Commerce and Labor, reports that during the past three fiscal years ended June 30, 1905, from the ports of Europe 1,932,934 steerage passengers embarked for New York, of whom 423 died on the voyage, or about 22 deaths per 100,000 passengers. Allowing twelve days for the average voyage, the rate is equivalent to an annual death rate of about six and one-half (6.56) per 1,000. The highest monthly rate for the three years was January, the month of smallest travel, 38 deaths out of 87,260 in the steerage; the lowest rate, also 38 deaths, out of 256,838 steerage passengers, was May, one of the months of heaviest steerage travel to New York. Among the immigrants from northern Europe there were 242 deaths out of 1,351,221 steerage passengers; among those from southern Europe 181 deaths out of 581,713. Of the steerage passengers 31,873 were babies under one year, and 116 more were born in the steerage, two mothers dying in childbirth; 126,993 were children over 1 and under 8 years, and 1,774,068 passengers were over 8 years. Under 8 years 211 died; over 8 years, 212. The census figures for 1900 give deaths under 9 years in the United States, so exact comparison is not practicable. In the steerage one and one-third died out of every 1,000 children under 8 years. Only one steerage passenger out of nearly 2,000,000 died on shipboard from accident, and only one from yellow fever. Twenty-three committed suicide and seven disappeared (suicide, accident or murder). The principal causes of death were: Heart failure, 75 (20 children); pneumonia, 64 (37 children); inflammation of bowels, 40 (all children but five); meningitis, 34 (14 children); convulsions, 28 (children); apoplexy, 17; alcoholism, 17; marasmus or weakness, 17 (13 children); tuberculosis, 16 (8 children); bronchitis, 15 (12 children); congestion, 10; 5 children died from scarlet fever and 5 from measles. The remaining 47 deaths were due to 27 miscellaneous diseases.

THE YELLOW FEVER SITUATION.

EXTENSION OF DISEASE—RELATIVELY LOW MORTALITY—SEPTEMBER FEARED—FUMIGATION DAY IN NEW ORLEANS.

Louisiana.

Reinspection and Repair of Screens.—Flying squadrons have been organized to reinspect and repair screens in New Orleans.

Arrested for Failure to Screen.—Hart Newman was arrested August 22 for failure to screen three cisterns at Athletic Park, a resort owned by him.

Personal.—Surgeon Thomas D. Berry, United States Public Health and Marine-Hospital Service, has recovered from his attack of the fever.——Dr. John T. Crebbin, New Orleans, contracted the fever and has been gravely ill.——Surgeon Joseph H. White, United States Public Health and Marine-Hospital Service, has been made an honorary colonel on the staff of Governor Blanchard.

Resigned Rather Than Quarantine.—At Bayou Gaul the health board resigned rather than institute the quarantine demanded by citizens.

Mail Fumigation Unnecessary.—Some towns asked that New Orleans mails be fumigated, but the postmaster, after consultation with Dr. White, in charge of affairs, decided it was unnecessary.

Must Not Ship Bananas.—Surgeon-General Wyman ordered that no banana cars be shipped north from New Orleans on account of inability to destroy the mosquitoes that they are very likely to transport.

Many persons in New Orleans, including President Charles Janvier, president of the citizens' yellow fever committee, have been fined for failure to screen cisterns, etc., in accordance with the new mosquito ordinance. The courts are vigorous in sustaining the measure.

Wanted Militia to Abate Quarantine.—Local quarantines became so annoying that the State Board of Health and the governor considered calling out the militia to enforce the moderation orders of the state board.

Cases Increasing, Mortality Lessening.—There are more new foci in the good part of New Orleans and more prominent people are suffering, but the mortality is steadily less—very small among those well cared for from the beginning.——Nearly all new cases are near the originally infected area.

Fumigation Day.—On Sunday, August 20, nearly 300 tons of sulphur was burned in the effort simultaneously to destroy mosquitoes in every house in the city.——Four or five tons of wire screens are daily shipped into New Orleans.

Good Work of Committees.—The volunteer ward committees of New Orleans, under the splendid leadership of Rev. Beverly Warner, have accomplished wonders. Every room has been inspected. On one day every gutter in the city was salted to kill vegetation and mosquitoes.

Comparative Mortality.—The figures show a decreasing mortality. Comparing as of date August 20, the cases and deaths of this epidemic and that of 1878 we find:

	1878.	1905.
Cases to August 20	1,355	1,397
Deaths	496	201
Percentage mortality	37.	14.

Quarantines Recoil.—Prolonged quarantines are proving costly to the small towns, both directly and indirectly.——When a suspected case occurred at Bon Ami, the town found that absolute non-intercourse quarantines having suspended train service, it could not receive the services of a fever expert whom it asked the State Board of Health to send.——A case at Lafayette on August 1 caused a turning of the tables, as the town, after having been most rigid in its quarantine, now found itself cut off by the neighboring places.

A Second Marine-Hospital Surgeon Attacked.—Dr. Maxine Landry, United States Public Health and Marine-Hospital Service, was reported, on August 22, to be ill with the fever.

Immune Nurse Dies.—An immune nurse who went through the Cuban experience died of a second attack.

Fever Spreads in New Orleans.—The fever has spread to the St. Louis Cathedral and the Court buildings.

Freight Held Up.—Freight for the Isthmus of Panama in enormous quantities is being delayed at New Orleans by the interference with shipping.

Fever in Jail.—An Italian ill with fever spent Sunday in jail and created a panic when brought into court on Monday of this week.

Train Inspection Extended.—Surgeon Young, United States Public Health and Marine-Hospital Service, has charge of the train inspection service running out of New Orleans, and has extended the service in thorough fashion as far north as Memphis, Tenn.

Detention Camps.—On August 17 Camp Wyman had seventy-five inmates and a waiting list of 243; Camp Slidell had twenty inmates and 107 waiting, and Camp Avondale seventy-five inmates with a waiting list of 235.

Cross Purposes.—At Lake Charles the board of health wishes to admit freight from New Orleans but the citizens and municipal officials have thus far prevented such action.

Panic and Scarcity of Food.—Panic exists in the small towns and in those along the Gulf coast there is a scarcity of provisions, due to the many obstructing quarantines.

Conditions Favorable for Spread.—United States Public Health and Marine Hospital Service recognizes that the conditions are favorable for continued spread of the disease, and feels that to restrict it within reasonable limits will be a great measure of success.

Penalty for Not Reporting Cases.—A few of the older physicians even yet are unwilling to report their fever cases. To these Surgeon White has announced that prosecutions are certain and that the penalty will be, not only a fine, but imprisonment.

Banana and Oyster Famine.—Bananas are becoming scarce in New Orleans because of the embargo on fruit steamers from the tropics. The available supply is said to be coming via Mobile, and there is fear that the shipments bring with them a good many stegomyias.——New Orleans is also threatened with scarcity of oysters.

The New Orleans Record.—In New Orleans for the week ending August 12, there were 54 deaths from yellow fever in 112 from all causes, nearly half the week's mortality. Exclusive of negroes, the death rate for the week was 24.80.

The New Orleans record for August 21, 1905, is as follows:

Total cases to date	1.458
Total deaths to date	210
Percentage mortality	14.4 per cent.

Sanitary Work Should be Continued.—Surgeon White, addressing the ward presidents of the volunteer sanitary, emphasizes the necessity of making the organization permanent and continuing the work until, at least, the disease ceases. He said that once a week a "mosquito killing day" would be necessary, and that once every seven days all gutters must be flushed. The cistern inspection must continue and must be thorough. Until screening is perfect, cisterns must be oiled, and with high-grade oil to avoid unpleasant consequences.

Arsenized Devotees Die.—It is reported that 12 of the recent deaths from yellow fever have been of adherents of the arsenic theory exploited by Dr. Leach. A formal letter was issued August 22 by Surgeon J. H. White, United States Public Health and Marine-Hospital Service, and by the president and advisory committee of the New Orleans Medical Society, telling how patients were under treatment who had partaken of the arsenic diet for the supposed sufficient period to render them immune. The letter was drawn forth by the announcement that there would be a mass-meeting of the arsenic adherents Wednesday or Thursday night to denounce the medical practitioners of New Orleans.

The Arsenization Idea.—Some difficulty has arisen from the notoriety attending the visit to New Orleans of Dr. Reginald B. Leach, a homeopathic physician of St. Paul, Minn., who holds that arsenization is a preventive of yellow fever infection. He has talked freely to the newspapers and has addressed public meetings of sympathizers. He announced that he came to New Orleans to give his theory a practical demonstration, by allowing himself to be bitten by an infected stegomyia. He refused to go on with the experiment unless it was conducted by the New Orleans Medical Society, which refused his request, not caring to countenance an experiment that might result in death and not having any active members who could well be spared from the active fight against the disease. Many physicians fear an epidemic of arsenical poisoning, the popular love for a "specific" having led hundreds, after reading Dr. Leach's newspaper interviews and articles, to eat arsenic. Belief in this extraordinary theory has led many citizens of New Orleans to ignore the orders of Dr. White and his assistants. The eaters of arsenic pills have neglected to clean up their premises and screen their cisterns. Orders were issued on August 18 for the instant arrest of all who have failed to obey the mosquito ordinance. The disciples of Dr. Leach held an indignation meeting at which the medical profession and the press were jointly denounced.

Outside Parishes.—Calcasieu Parish, which stopped through traffic on the Southern Pacific, has since ameliorated its restrictions.——Madison Parish barred out freight and drugs as well as passengers. However, a case of fever developed at Tallulah, in the parish.——Rapides Parish has ameliorated its quarantine.——The conditions in St. John and St. Charles Parishes are exceedingly bad, the houses of the poor being full of mosquitoes. Dr. Corput, M.H.S., is in charge and has his hands full. Many are so anxious to get away that crowds wait their turn to undergo the ten days required at the detention camps.——Jefferson Parish had five cases, all imported from the original New Orleans focus. No quarantine was established, but the cases were promptly and effectively isolated, while a campaign was waged against mosquitoes. The disease has disappeared from the parish, though there is daily mingling of the citizens with the people of New Orleans.

Other Towns.—Gueydan condemns panic quarantines.——Washington announces that it is a clean town, that mosquitoes are exterminated and trains are forbidden to enter the town.——Mansfield admits daily an engine and a mail car.——Baton Rouge has erected a yellow fever hospital, and is busy oiling and screening.——Sporadic cases have occurred at Diamond, Sarpy and Reserve plantation.——Patterson has had a number of cases.——Many cases have been discovered at the mouth of Bayou La Fourche.——Alexandria admits mail.——Algiers, a town of 20,000 population, just across the Mississippi from New Orleans, had a case of yellow fever late in July. The patient was properly screened and mosquitoes were killed. After the lapse of three weeks a house-to-house canvass showed that the disease had not spread.——No new cases have occurred at Shreveport and quarantine is relaxed.——La Place has a number of cases.——Allentown and Pleasant Hill are isolated.——On August 17 the situation near New Orleans was as follows: Diamond plantation, St. Charles parish, twenty-six cases, three deaths; Alexandria detention camp, three cases; Patterson, St. Mary parish, fifty-two cases, one death; Tallulah, Madison parish, three cases, one death; Pointe Celeste, Plaquemines parish, seven cases, one death; Lafayette, two cases; Rayne, two; La Place, twenty-one; Terre Haute plantation, four; Bucktown, one; Willswood plantation, five cases, two deaths; Empire plantation, one; Sunrise, Plaquemines Parish, one; Bayou Cook, one case, one death.——New cases were found on August 18, at Hanson City one, at Shrewsbury two, at McDonogesville one, at Pecan Grove five, as well as six new cases at Patterson, with one death.——The one victim at Alexandria died.——Ouachita has abandoned its shotgun quarantine.——Iberville called off its quarantine but an influx of refuges from infected Bayou Goul led citizens to demand the rigid quarantine, and in consequence the health board has resigned.——On August 21 Hanson City reported eight new cases, Kenna four, Iberville two, Corinne two, and Patterson ten.——Riverside reports, to August 18, forty--eight cases and three deaths.

Funds to Fight Fever.—Governor Blanchard has arranged with bankers to furnish $100,000 as the state's contribution to the New Orleans fund to fight the epidemic.——Three New York life insurance companies—the Mutual, the New York Life and the Equitable—have each been asked for $50,000 contributions.

Interparish Conference.—Lafayette was the scene on August 8 of a conference of officials from the parishes of Calcasieu, St. Landry, Acadia, Vermillion and Lafayette, at which a schedule of uniform quarantine regulations was adopted. This permits re-establishment of through passenger travel and provides five-day detention for those from New Orleans and other infected points, responsible inspectors, uniform certificates, and permits entrance of fumigated baggage.

During two days at Leeville there were found 69 positive cases of fever, 53 suspicious cases and 145 cases of dengue. There are about 300 houses and families there and not a single house but has one or more cases of sickness. The people are distracted. All seem to have lost ambition to work. They are completely demoralized. Two more deaths are reported there.——Patterson reports 15 new cases and no deaths. St. Tammany parish reports a case on the road between Mandeville and Lewisburg. Hanson City reports 6 new cases, Kenner 1 and Sarpy plantation 2. There was one death on Elizabeth plantation in Iberville. St. Rose, in St. Charles parish, has 2 cases and 1 is dead. Corinne plantation, in St. Bernard parish, reports one death. Mississippi City reports 3 new cases.

Other States.

Alabama.—Tuscaloosa is quarantined against all yellow fever points and enforces a two-weeks detention.——The Mobile quarantine against New Orleans is to last until December, unless earlier revoked.——Dr. John Guiteras of Havana, on August 15, addressed the citizens of Mobile on the subject of yellow fever.——The Jefferson County Medical Society at Birmingham, on August 14, decided by unanimous vote to ask for the raising of the quarantine against Montgomery.

Arkansas.—Having secured a state quarantine through the aid of the militia Dr. Cantrell asked local boards to withdraw their quarantines.——Texarkana reports a quarantine death, a quarantine guard having fatally shot a citizen running over the line.

Florida.—State health officer, Dr. Joseph Y. Porter, on August 14, extended the detention period for entry into the state from six to ten days.——The Hillsboro County Medical Society meeting at Tampa was addressed by Dr. John Guiteras of Havana and Dr. Porter, state health officer.——A few cases of dengue at Tampa caused a yellow fever scare.

Georgia.—Augusta has instituted an "absolute non-intercourse quarantine" against all infected places.——Columbus requires twenty days' detention before coming within five miles of the town.——The United States Public Health and Marine-Hospital Service has opened an office in Atlanta, in charge of Dr. Charles P. Wertenbaker, for the issue of health certificates.——Cordele requires twenty-one days' absence from an infected point before granting admission.——The mayor of Savannah has asked Surgeon-General Wyman to throw a cordon of soldiers around New Orleans, allowing no one to leave the city until after having undergone five days' detention under observation.——Atlanta was much displeased with a story in the New York Tribune of August 11 alleging there were at least a dozen concealed cases of yellow fever in that city.

Illinois.—Cairo and southern Illinois is now quarantined against the states of Louisiana and Mississippi, and all fever infected points in other states, and no passengers coming from either of those states or places will be admitted to Cairo unless they can show health certificates signed by a duly authorized and accredited board of health, showing that they have not been in the above-named sections within ten days. Furthermore, the city of Cairo is quarantined against the world, and no person can come into the city from any place unless they can show health certificates showing that they have not been in a fever infected district in ten days.——It was announced from Cairo on August 13 that Dr. Egan of the Illinois Board of Health and Dr. A. T. McCormack of the Kentucky board had arranged all differences regarding certificates and travel. However, on August 21, from the same place it was announced that Illinois would not receive certificates issued at Paducah, Bowling Green, Fulton or McCracken County, Ky., or at Bird's Point, Mo. No one can get into or through Cairo now without a satisfactory certificate of health.——Many refugees from Louisiana are in Chicago, Evanston and nearby places.

Indiana.—Dr. T. Victor Keene, city sanitarian of Indianapolis, has gone to New Orleans to study yellow fever.

Kansas and Missouri have a uniform quarantine.

Kentucky.—Two detention hospitals have just been erected by the railroads entering Louisville from the south, to be used to care for persons reaching the city who are sick. Louisville has opened her doors to yellow fever refugees, and Kentucky will not quarantine. Dr. John H. Ward has been appointed an assistant to the Health Office for the purpose of issuing health certificates to travelers who wish to go into districts which have quarantined against other points unless the individual has a certificate of health.——Dr. Vernon Robins, bacteriologist to the Health Department has hatched out several genuine stegomyia mosquitoes from larvæ obtained from a small pond at the station of the Louisville and Nashville railroad.

Maryland.—Baltimore reports the stegomyia present.

Mississippi.—Jackson does not permit through passengers to change cars at the city station nor to get off a train for lunch.——Box cars are not permitted to stop in the city, whether disinfected or not.——The members of the Italian colony have been notified that if they permit any friends from other cities to visit them the entire colony will be held ten days in detention camp and then "put on the rock pile or in jail."——Vicksburg has guards patrolling the river front to prevent persons landing from boats, the guards being under orders to shoot anyone disobeying orders not to approach the shore.——Natchez is *incommunicado* with the entire world, and Jefferson, nearby, refuses to admit citizens of Natchez. Shotguns on both sides enforce the order.——Governor Vardaman commended the citizens of various towns who refused admission to fumigated freight from New Orleans.——The governor and various health officials of the state have bitterly accused New Orleans and the Louisiana State Board of Health of bad faith, double-dealing and concealment of cases of yellow fever.——Tupelo bars out passengers and freight from infected points.——Sardis, Oxford, Brookhaven, Hazelhurst and Terry have quarantines.——Canton admits no one without a ten-day health certificate, and forbids relays of train crews on the Illinois Central Railway.——Tutweiler, Oakland, Greenville, Nesbit, West Point and Granada are quarantined.——Dr. John F. Hunter, Jackson, secretary of the State Board of Health, on August 8 courageously announced that he regarded "shotgun quarantine as wholly useless," and urged that where in force they should be abandoned. He advised the people to turn their attention from quarantines to sanitation and to extermination of mosquitoes.——On August 10 the Board of Health announced that there was not a case of yellow fever in the state.——On August 16, 11 cases of yellow fever were found at Mississippi City and 5 more on the succeeding day. It is said cases have been concealed there since July 20. In any event Governor Vardaman says no more about the perfidy of New Orleans, and now advises all Mississippi communities fully to co-operate with the efforts of the Marine-Hospital Service and to accept its certificates.——A new case occurred August 21 at Mississippi City.——Governor Vardaman has arranged with members of the Legislature for authority to borrow $50,000, or as much thereof as may be needed, to meet the necessities of the epidemic and has pledged himself to use the funds as economically as possible. ——The suspicious case at Yazoo City was found by Dr. Wasdir, United States Public Health and Marine-Hospital Service, to be one of pernicious malarial fever.——Dr. Hicks, health officer of Vicksburg, on August 14 sent back to New Orleans a carload of sugar which had been partly unloaded before discovery. The board of health decided to prosecute the railroad for delivering the sugar.——There appears good reason to believe that the infection of Mississippi City did not come from New Orleans.

Missouri.—Three cases of yellow fever, with one death, were reported from Gregory, Mo., ten miles south of Keokuk, Iowa. The victims were Italians recently arrived from Greenwich, Miss. A spread of the disease in that section is not anticipated.——The St. Louis *Post-Dispatch* says: "Let us use the methods of science and civilization, not of ignorance and barbarism."——St. Louis will use a steamboat as a yellow fever hospital if cases occur.

Six of the Italian laborers quarantined at Gregory have escaped.——The health board of Keokuk has issued orders prohibiting trains or steamboats stopping at Keokuk.

New York.—A laborer recently returned from Panama, who was isolated in the Norwegian Hospital, Brooklyn, and reported to be suffering from yellow fever, is now declared to be suffering from tropical malarial fever, and his recovery is despaired of.——Dr. A. H. Doty on August 15 removed from the Mallory Line steamer *Concho*, from Galveston, ten persons having temperature above normal, and kept them under observation as suspects.

Oklahoma.—Guthrie decided not to quarantine, the mayor announcing his full acceptance of the results of the late Dr. Reed's work in Cuba.

Pennsylvania.—The Pennsylvania State Quarantine Board at its meeting at Marcus Hook on August 8, decided to establish quarantine against all ports south of St. Mary's, Ga., which includes all ports on coast and gulf from which an invasion of yellow fever is to be feared. It is considered that with the precautions taken at Marcus Hook, Philadelphia stands in no immediate danger of a visitation of the fever.

South Carolina.—Charleston fumigates cars, detains vessels from Central America, and requires five days' detention of persons from infected points.——The Board of Health of Columbia decided that quarantine was unnecessary.

Tennessee.—The Memphis and Shelby County Medical Society approved the quarantine as being demanded by the commercial bodies, but expressed its conviction that the disease is spread by mosquitoes.——Memphis permits through passengers to step from one train to another, but no more.——The Chattanooga quarantine is rigid and has been accompanied by various spectacular procedures. Through cars from Louisiana must have doors and windows closed and locked while passing through the city. Laundry operations have been restricted by fear of the workers getting yellow fever from Pullman car bed linen. One traveler said: "Knowing as we all do, that yellow fever is not even contagious without the mosquito inoculation, it is needless to say that Chattanooga is worth a visit just to see the fun." Another traveler wrote: "They were whirled at speed through Mississippi and Tennessee towns; there was no buffet or diner, and ice and water alike gave out. Neither conductor nor porter were permitted to leave the car at any station, and women and children were made to suffer 'sweatbox' punishment from closed sashes. In a high temperature this was often prolonged by switching off the sleeper and 'isolating' it a mile or so away, awaiting some through train to whirl the infected monster to the next insane town."—Memphis has had its quarantine troubles, and has finally ameliorated its conditions. One man secured a court injunction suspending the quarantine so far as his family was concerned.——Many trains have been annulled until travel is resumed.——It is alleged that politics played its part in the quarantine, the Board of Health being shorn of power, which was transferred to the chief of police.——Knoxville inspects all trains.——Brownsville keeps out everyone who has not a certificate from its county board of health.——Moscow ordained "that it shall be unlawful for any person to enter the corporate limits during the prevalence of yellow fever in the South."—It is said that the stegomyia abounds in Knoxville.——The Tennessee Legislature at its last session provided only a reduced epidemic fund of $5,000. Request has therefore been made of Surgeon-General Wyman to conduct train inspections with the corps of the United States Public Health and Marine-Hospital Service.——The Tennessee health authorities are endeavoring to arrange with Surgeon Young, United States Public Health and Marine-Hospital Service, and with the authorities of Mississippi and Arkansas for uniform certificates of health.——Memphis continues to kill mosquitoes and oil stagnant water.——Memphis has decided to permit passengers to transfer through the city, a detention car to be provided.

Texas.—Houston has a new mosquito ordinance, and oil has been supplied for pools, swamps, cisterns, etc.——Somerville is cleaning up and killing mosquitoes.——Jasper has a rigid quarantine.——It is proposed to inspect trains entering Texas from Indian Territory, to exclude refugees coming in by the roundabout way.——*The Texas State Journal of Medicine* scores those physicians who, disbelieving in the mosquito hypothesis, publish their dissent in the newspapers. It well says that such expressions are "pernicious, contrary to demonstrated facts, calculated to lessen medical influence, disturb public confidence, threaten commerce, and endanger human life."——As a matter of precaution the annual encampment of the Texas National Guard will not occur this year. ——The Texas Legislature provided no funds to fight disease and forbade the issuing of emergency certificates. The State Health Officer may therefore be compelled to accept public subscriptions in order to meet necessary expenses.

Virginia.—A strict quarantine against yellow fever was arranged for by the State Board of Health August 14. Correspondence from the Norfolk Board of Health was read setting forth the necessity of state action and the board determined on a vigorous method which is practically a quarantine against the infected districts. Inspectors will meet all trains at the state line and detain any suspected cases. Boats from the south will be subject to strict examination and quarantine regulations by the Norfolk authorities.

General and Foreign.

Cases to Date.—Up to the evening of August 20, 1,641 cases had been reported, with 221 deaths from 322 sub-foci of infection. On August 20, 61 new cases were reported in New Orleans and 21 outside of the city, making a total of 82, from 16 new sub-foci of infection, and 9 deaths.

Epidemic in Honduras.—It is reported that yellow fever is practically epidemic in Honduras, and that the disease appeared there simultaneously with the outbreak in New Orleans in May. It is believed that the disease was conveyed to Honduras by Italian freight handlers on the fruit steamers plying between there and New Orleans.

Panama.—Goverorn Magoon is supporting extraordinary efforts to perfect the proper sanitation of the Isthmus. Laborers have been withdrawn from other tasks for this purpose, and every effort is being made to assure sanitary camps, to get a good water supply into Panama, to erect hospitals, to fill in swamps and to cut down the underbrush about Colon and all the camps.

Record to August 23.—New cases outside New Orleans, August 22, 69; new deaths, 3; new cases in New Orleans, 57: new deaths, 9; new sub-foci, 21. In all 1,598 cases have been reported, with 230 *deaths*, a death rate of 14.4 per cent.

FOREIGN.

The Chair of Surgery in Leeds University.—Mr. Edward Ward, who has held the professorship of surgery in Leeds for the past six years, has resigned. He is to be succeeded by Mr. Harry Littlewood, M.Sc., F.R.C.S.

Cholera in Russia.—A dispatch from Europe states that cholera is still raging in several provinces on the left bank of the Vistula. The report states that the Russian censor has forbidden the publication of any details of the epidemic. Until now the frontier districts have not been affected.

International Congress of Hydrology.—The seventh meeting of the International Congress of Hydrology, Climatology, Geology and Physical Therapeutics will be held in Venice, Oct. 10, 1905. The general secretary is Dr. Fausto Oreffice, S. Stefano 2803, to whom all communications should be addressed.

International Exhibition in New Zealand.—The government of New Zealand, it is reported, has decided to hold an international exhibition at Canterbury from November, 1906, to April, 1907. One of the principal objects of the exhibition will be to demonstrate the resources of New Zealand as a food-producing country.

Summer Diarrhea Among Children in London.—A cable report from London, dated August 19, states that every hospital for children is full and that cases of summer diarrhea are being turned away because of lack of accommodation. There is reported to be a greatly increased mortality from this disease among children under 2 years of age.

The Plague Mortality.—It is reported that the plague epidemic has perceptibly declined. The Central Provinces, Central India and Rajputana are said to be free from the disease, but this is probably doubtful. The officers investigating the disease will remain in India till October. They are now engaged in research work in Bombay.

New Public Mortuary in Hong Kong.—The new public mortuary, which was completed in the early part of the year, is equipped so that the most varied pathologic research can be undertaken. The institution includes one research laboratory for the examination of rats and other animals, two large mortuaries, and two small laboratories for research work.

Epidemic of Sore Throat in London.—It is reported that hundreds of cases of sore throat have occurred in London. The disease is said to be slightly contagious. The first symptoms are slight hardness in the throat, which by morning has developed into a stinging pain. In some cases the Eustachian tube seems to be involved as a few patients complain of partial deafness.

Swimming in the Glasgow Public Schools.—For some time the Glasgow school board has given lessons in swimming in the public schools, and it is stated that these are much appreciated. Over 90 per cent. of the boys, receiving two lessons a week, were able to swim well after eight weeks, and about 50 per cent. of those receiving one lesson a week were fairly proficient in the same time.

Malaria in Italy.—The prophylactic administration of quinin is the distinctive feature of the campaign against malaria now being pushed into the Roman Campagna, under the auspices of the Italian Red Cross Society. During the month of June it is reported that 8,021 persons were given quinin in preventive doses. There were 168 cases of malaria in the section under observation, all of which occurred among persons who refused prophylaxis or were negligent in pursuing treatment.

Pure Milk Depots in England.—In an effort to check infant mortality the municipality of Leeds has decided to establish pure milk depots where the poor can obtain clean milk. The lord mayor has started a fund for this purpose with a subscription of $1,000. A committee has been appointed, composed of medical men, and the chairman in a letter asking for subscription refers to what has been done in America in this way. The committee intends purchasing milk from farmers whose cows are free from tuberculosis. It is intended that the cows shall be milked and the milk cooled and bottled under the immediate supervision of the employés or officials of the committee.

London Coroner Advocates Day Nurseries.—Dr. Waldo, the coroner for the city of London, is quoted as saying that the high death rate among infants and young children is largely due to ignorance and to involuntary neglect. Many women who are employed during the day leave their children to be looked after by neighbors, with the result that the children are often fed milk tainted with germs from the dust and refuse in the streets. The ignorance of mothers as to the proper way of caring for a baby or of feeding it, Dr. Waldo thinks, is also a cause of the high death rate. He states that he is in favor of the establishment of crèches near all large factories and workshops, where mothers can leave children in the care of a competent attendant and have them looked after properly on payment of a small fee.

An Antimalarial League in Greece.—An antimalarial league has recently been founded in Athens under the patronage of the king. The objects of the league are to disseminate knowledge concerning the results of modern malarial research among the people; to study the distribution of malaria and its special characteristics in the various districts; to draw up maps showing the marshes in each department; to remove pools in the neighborhood of houses; to investigate the means of drying up or of purifying the marshes; the destruction of mosquitoes; the introduction of mechanical means of protection of houses, etc.; the gratuitous supply of quinin, and the drafting of a bill providing for the carrying out of these objects and its presentation to the government. Professor Hadzimichalis, president of the Superior Health Council, is president of the league.

The Mission to Lepers in the East.—During the thirty years of its existence this mission has received about $850,000. Its first asylum was built in 1875 and it has now 42 asylums of its own while it aids 16 others. It has 20 homes for the untainted children of leper parents. This separation of healthy children, says the *British Medical Journal*, is one of the most important branches of the society's work in the struggle against leprosy. In addition to India, the society is active in various centers of Burmah, Ceylon, China, Japan and Sumatra. Several asylums in India have been transferred to its care, showing that the endeavors of the mission to lepers are appreciated on the spot, so much so that it receives considerable aid from the government. The medical side of the work is kept well in view. In many places fully qualified men are in charge of the asylums; in others there are hospital assistants, or helpers, with some medical knowledge. In the East there is no doubt that western medical influence is called on to play a preponderating part in the advancement of civilization.

Longer Period of Study for Indian Medical Students.—It was proposed to increase the period of study in the Calcutta Medical School from five to six years, but after the subject was thoroughly discussed it was decided to make no change, as a certain number of native medical men, supported by a limited portion of the native press, advised students to go to Japan and study rather than to Europe or Calcutta. One reason given for this advice is the reputed cheapness of study and of living in Japan, while at the same time it is argued that the education is equally good. It is forgotten, says the *Lancet*, that students who do not possess qualifications recognized by the government naturally have to shift for themselves as best they can in various forms of private practice. That a certain section of the native press should support such a proposal is not altogether astonishing and it is taken advantage of to attempt a sort of rebuff to British and European medical pretensions. In fact, the proposal was very inadequately considered on its merits and was chiefly made use of as a political move. The *Lancet* considers it very poor patriotism on the part of the Bengali "nation" to sacrifice its medical students for the sake of a very doubtful political snub.

Leprosy in China.—The Public Health and Marine-Hospital Service calls attention to a medical report, by Dr. Georges Brarbezieux, in the publication of the Chinese Imperial Customs, in which is described a remarkable focus of leprosy existing in Yunnan, the most southwest province of China. The report states that the number of lepers is very great and that they wander in the fields and about the streets of towns, frequenting abandoned pagodas and presenting the horrible stigmata of the disease. There are in Yunnan entire villages of lepers where the inhabitants live miserably on the products of rice fields. These persons have slight relations with the outside world, though they are free from the restraint of sanitary regulations and are not by any means ostracized. Nevertheless, they seclude themselves from the society of healthy persons, mingle with lepers only, and do not visit other villages except when the gravity of their disease renders labor impossible. When broken down physically by the progress of the disease they join themselves to more prosperous and healthy communities, and thus swell the immense army that lives in such places by public charity. With the advent of white men in Yunnan the number of leprous beggars has notably increased. It is estimated that in Yunnan there is one leper for every 100 inhabitants, but the concentration in certain parts of the country is still greater than the general figures indicate. There are no institutions, public or private, for the care of these unfortunates, and the disease is not considered to be more than very slightly, if at all, contagious.

LONDON LETTER.

Goats and Malta Fever.

An important discovery seems to have been made with regard to the propagation of Malta fever. About twelve months ago a commission was appointed by the admiralty, the war office and the civil government of Malta for the purpose of inquiring into the prevalence of Malta or Mediterranean fever among the naval and military forces and the general population of Malta. The commission originated in a letter sent by the colonial secretary to the Royal Society in which he drew attention to the prevalence of the fever and invited the society to nominate a commission of investigation. This was done, and Colonel Bruce of the army medical department (who in 1887 discovered the microbe of Malta fever, the *Micrococcus melitensis*), was appointed chairman. For some time the committee has been engaged in pathologic investigations of an extended character. A series of epidemologic inquiries were conducted in the Maltese Islands by Dr. R. W. Johnstone, one of the medical inspectors of the local government board. Then attention was directed to the milk supply. In Malta the usual source of milk is the goat, flocks of which are driven about the streets to be milked at customers' doors. Two members of the commission, Dr. Zammit and Major Horrocks, have determined experimentally that goats are susceptible to Malta fever. Hence they infer that the disease may be spread to man by the medium of milk. Numerous tests showed that some of the goats in every herd examined were suffering from Malta fever, and that the micrococcus is excreted in the milk in enormous numbers when the disease has existed long enough to bring about a change in the physical character of the fluid.

The King's Hospital Fund: Permanent Income of $250,000 Secured.

The King's Hospital Fund was founded in 1897 by his majesty when Prince of Wales, who saw in the scheme a striking way of commemorating the sixtieth year of the reign of the late queen. In the first eleven months of its existence $1,100,000 was paid into the fund, and this has been increased each year until at the end of 1903 the total amounted to $5,500,000. The awards paid to the various London hospitals have amounted to $2,500,000, and more than $3,300,000 has been invested. As the result of some recent gifts and bequests the fund has now reached such a capital amount that a permanent income of $250,000 is secured—the object at which the trustees have been aiming for some time. All the hospitals within a radius of seven miles from Charing Cross or within the area of London County Council are entitled to share in the benefits of the fund, which since its foundation has been instrumental in opening no fewer than 443 free beds.

The Government and Industrial Mercurial Poisoning.

The government has issued a memorandum reminding medical practitioners that they must notify the chief inspector of factories of every case of mercurial poisoning contracted in a factory or workshop. Proper notification forms for this, as also for anthrax, for poisoning by lead, phosphorus or arsenic are supplied. Factory surgeons are obliged to investigate and to report on all cases of mercurial poisoning brought to their knowledge, and in certifying children and young persons for employment in industries in which mercury is used they are reminded of the undesirability of young persons being employed in mercurial processes, not because they are more susceptible to the poison, but because of their probable inattention to the necessary precautions. Fifty-six cases of mercurial poisoning were reported between May, 1899, and Dec. 31, 1904. They occurred in the following industries: Manufacture of thermometers, 15; electric meters, 15; hatters, furriers, 10; chemical works, 7; water gilding, 5; powder factories, 3; photoengraving, 1. Factory surgeons have power at their periodical medical examinations to suspend not only workers showing signs of poisoning, but those who, by inferior physique, indulgence in alcohol, careless habits and want of attention to the regulations, show a liability to mercurial intoxication.

The Quatercentenary of the Royal College of Surgeons of Edinburgh.

With fitting pomp the Royal College of Surgeons of Edinburgh has celebrated its quatercentenary. The celebration began by a service in St. Gile's Cathedral, which was attended by a large and brilliant gathering. The honorary fellows-elect, who included distinguished surgeons from all parts of the world, among whom were the American professors Halsted, Keen and Howard Kelly, the fellows and a representative company of guests marched in procession to the cathedral. The commemoration ceremony was held in the afternoon and was attended by representatives of other colleges, of various universities and of learned bodies. Sir Patrick Heron Watson, the president, delivered a short address of welcome in which he sketched the history of the college. Its origin as a corporate body may be traced to the reign of James IV of Scotland, who in 1506 confirmed the royal charter which a year previously had been granted to the barber-surgeons resident within the borough of Edinburgh by the provost, bailies and council of the borough. There is reason to suppose, however, that previously an organized body of practitioners existed to whose desire for authority to practice the college is indebted for its inception. The honorary fellowship was then conferred on a number of distinguished foreign and British surgeons. A banquet was held at which 350 were present. The president was accompanied by the lord provost of Edinburgh, the French ambassador and other prominent officials and distinguished guests.

"Costly Medical Errors."

Under this and similar titles the lay press waxes very indignant at errors in diagnosis made by physicians who have sent patients to the London fever hospitals. It appears that during 1904, 21,000 cases of scarlatina and 538 cases of smallpox were admitted to these hospitals, and that also nearly 2,000 cases of mistaken diagnosis occurred. The average period of detention in these latter cases was a little over three weeks and the expenditure represented $60,000. The chairman of the statistical committee of the hospitals said that this expenditure ought never to have been incurred and that these patients should never have been sent to hospit How infallibility of diagnosis is to be secured he did not explain.

The Proposed Amalgamation of the London Medical Societies.

The executive committee of representatives of the London medical societies, appointed to consider a scheme of amalgamation, as mentioned in The Journal, May 6, 1905, page 1461, has presented a report. The committee appointed chartered accountants to investigate the rolls of membership and the accounts of the principal 22 London societies. These were found to have a membership of 7,229, composed of 4,997 persons. Of these 3,725 are members of only one society and the remaining 1,272 are members of more than one society. The balance of assets over liabilities (including certain bequests and trust funds) is more than $200,000. If 3,800 members of societies other than the Royal Medical and Chirurgical Society become members at a subscription of $5 per annum the new society will have a small balance of income over expenditure. If any members of these societies become fellows at a subscription of $15 the balance will be increased. This estimate is based on the present income and expenditure of the Royal Medical and Chirurgical Society and the income and expenditure of 17 other societies, and makes no allowance for any economics which may be effected by the union. The present income of the Royal Medical and Chirurgical Society is $25,000; its expenditure is $21,500. In view of the facts that 3,525 persons already subscribe $5 each to the other societies and that 1,272 pay from $10 upward, it is thought that the new society will have a sufficient balance of income over expenditure to provide for improvements and for any sinking fund rendered necessary by extensions of the premises of the Royal Medical and Chirurgical Society. The committee made the following suggestions: 1. The new society shall be called the Royal Society of Medicine, or the Royal Academy of Medicine, according to the vote of the societies concerned. 2. It shall be housed at 20 Hanover Square, the present premises of the Royal Medical and Chirurgical Society. Increased accommodation can be obtained by extending the premises and by the absorption of certain rooms now occupied by tenants. 3. The society shall meet four or more times annually to discuss subjects of medical and scientific interest. 4. The society shall consist of the following sections, with power to add new sections or to modify the existing ones: 1, Anesthetic; 2, clinical; 3, dermatologic; 4, diseases of children; 5, epidemiologic; 6 laryngologic, otologic and rhinologic; 7, medical; 8, mental medicine (psychiatry); 9, neurologic; 10, obstetric and gynecologic; 11, odontologic; 12, ophthalmologic; 13, pathologic; 14, state medicine; 15, surgical; 16, [illegible] general therapeutics, pharmacology, [illegible] lneology and climatology. It is hoped t[illegible] e an anatomic and physiologic section will be formed. 5. The society shall consist of fellows, members, honorary fellows and honorary members. The fellowship shall be restricted to those practitioners whose scientific attainments are satisfactory to the general council. 7. A fellow shall pay annually $15 and shall have the right to attend all meetings of the society or any of its sections, and shall have the full use of the library. 8. Each section shall have power to elect as members of the society such persons as the council of the section shall think fit, provided that the names be previously submitted to the council of the society for approval. 9. A member of any particular section shall pay annually $5 and shall have the right to attend all the meetings of his section, but must pay an additional $1 annually if he wishes to use the library, and a further subscription of $2.50 for each additional section. 10. The general management of the society shall be under the control of a general council consisting of the president, the presidents of the various sections, two treasurers, two librarians, two secretaries and eight other fellows. 11. A monthly publication shall be issued except in the months of July, August and September, and be called "The Proceedings of the Royal Society of Medicine." It will be under the control of an editorial committee and will contain a record of the work of each section during the previous month. In addition the committee will select, subject to the approval of the general council, such papers as they may consider worthy of publication in the transactions of the society. The committee further suggested that it would be an advantage to form a committee of representatives of the various sections to receive all papers to be read. This committee would have power to decide before which section a paper should be read and whether other sections of the society be asked to join in the discussion. The committee concludes that the union of the medical societies will do much to enhance the prestige of British medicine and to increase the value of the work carried on by the existing societies, and that it will be a great convenience to the profession.

The Increase of Suicide.

At the Medicolegal Society Dr. Wynn Westcott, coroner for Northeast London, read an important paper on suicide. He found that inquest juries bring in only about 1 per cent. of suicides as guilty of *felo de se;* in cases where there is no evidence of the mental condition of the person they attribute the act to temporary insanity. He said that patients are often prematurely discharged from asylums and in the exigencies of home life slay themselves. Of predisposing causes alcoholism is the most common, then the presence of disease. An additional grievance or an overmastering passion, he stated, is usually the proximate cause. The relation of the sexes is very constant—three men to one woman. The rate of suicide per million of the population is constantly increasing; thus in 1861 it was 66; in 1881, 77; in 1891, 85; in 1901, 96, and in 1903, 105.

Correspondence

The Yellow Fever Epidemic.

NATCHEZ, MISS., Aug. 15, 1905.

To the Editor:—In THE JOURNAL, August 12, you did a palpable injustice to some of the best people in the South when you refer to the quarantines as relics of the middle ages. Please let me call your attention to the report of the president of the Louisiana State Board of Health, in which he admits that he was aware of the existence of the fever on the 13th, but waited eight days before admitting it, thus allowing the people from the infected area time to scatter all over the states of Alabama, Mississippi and Louisiana. It is this continued failure to keep faith with the people that has forced the present harsh measures. We know that non-intercourse with infected areas will prevent the introduction of the disease into the healthy towns, and propose to follow up the plan that has proved safe in other times. We have had two small epidemics here; in both cases the infection was brought here when there were no reported cases in New Orleans. We lost some of our best people each time, and the fever spread in spite of every known method of checking its progress.

I have had considerable experience in the treatment of the fever though not an immune, and I may tell you that I am unable to prevent the mosquitoes biting either myself or the patients. My own house is screened throughout with the finest of wire screens, and each bed has the very best mosquito netting, yet in spite of all these precautions we have to endure the annoyance and stings of these pests. All southern people know these things, and for this reason they seriously doubt the possibility of checking the spread of the infection by means of screens. They know the practical impossibility of preventing the patient being bitten.

As to the quarantines: We do not enjoy them at all ourselves. They almost destroy trade and prevent business of all kinds. But we can not help ourselves. We do not know where the infection has spread, so a policy of exclusion is being practiced. We harm no one; simply say to them, "For the present please stay at home." If you will come here and visit us, and let us show you our death records, we are sure that you would favor anything that gave promise of safety from this pestilence.

It may be that some reporter allowed his imagiantion to run away with his regard for the truth, and to that report you referred. But to my mind, the people have acted with great forbearance, considering the vast amount they had at stake. We do all in our power to render the six days' detention as pleasant as possible to all concerned. But this city is certainly closed to the world for the present. If it were not so, persons leaving New Orleans could go direct to Chicago, procure a health certificate, and be here in less than three days.

I trust that you will publish this little note, and you can refer to the issue of THE JOURNAL for August 12 for the report of Dr. Souchon to which reference is made.

J. C. BALLARD, M.D.

An Indorsement of Governor Pennypacker by Philippine Islands Medical Association.

MANILA, P. I., July 12, 1905.

To the Editor:—By direction of the Committee on Public Policy and Legislation of the Philippine Islands Medical Association, I have the honor to forward a copy of a resolution tendering a vote of thanks to Governor Pennypacker of Pennsylvania for the service which he has rendered the medical profession of the world and the people of his state in withholding his signature from the bill passed by the legislature to legalize and regulate the practice of osteopathy in Pennsylvania.

Governor Pennypacker has evidently given the subject of class legislation more study than is usually bestowed on it by chief executives, as is shown by his clear understanding of those principles of ethics and justice for which the medical profession has always stood.

He could have rendered his people no greater service than that which has been accomplished by his veto which may truly be called "A veto for the protection of the people of Pennsylvania from the evils of legalized quackery."

Very respectfully,

R. E. L. NEWBERNE.

Secretary-Treasurer, Philippine Islands Medical Association.

RESOLUTIONS.

WHEREAS, It having come to the knowledge of the Committee on Public Policy and Legislation of the Philippine Islands Medical Association, through the editorial pages of THE JOURNAL of the American Medical Association, that Governor Pennypacker of Pennsylvania has vetoed the bill passed by the legislature to legalize and regulate the practice of osteopathy in that state; and

WHEREAS, The reasons given by the governor for his course are so manifestly just and fair, it was, on motion,

Resolved, That the Committee on Public Policy and Legislation of the Philippine Islands Medical Association tender a vote of
thanks to the governor of the commonwealt
the careful study which he has given this
for the just, courageous and scholarly stan
in the interest of science and justice, and
the people against the evils of class legislati

Resolved, That the secretary of the committee be instructed to forward copies of the resolution of the committee to Governor Pennypacker and to THE JOURNAL of the American Medical Association.

Finsen's Light Institute.

COPENHAGEN, July 11, 1905.

To the Editor:—After a week spent at Finsen's Light Institute I have begun to realize the magnitude and extent of the work performed here. Each day from 150 to 200 patients receive treatment, among whom one can recognize types from all civilized nations. The institute itself is situated in a quiet part of Copenhagen, the streets leading thereto being amply provided with shade trees which produce a pleasing and restful effect as one approaches the buildings. The institute physicians, four in number, are well trained and courteous. The government annually subscribes 30,000 kroner toward the maintenance of the institution. This, together with the Nobel prize money which Finsen munificently tendered the institute, has rendered possible its present complete organization.

All who seek treatment obtain it. Those who can afford to pay do so, and those who can not afford to pay receive treatment gratis. A school is also maintained for the children who are compelled to undergo treatment for a long time. Much compassion is shown the poor unfortunates who come disfigured with disease, and they are treated most kindly by physicians and nurses alike. From 8 to 11 a. m. every day the physicians are at work in their large, well-lighted clinic room, examining new patients and treating by topical applications and the galvanic cautery such lesions of the nasal and oval cavities as are inaccessible to the lamp treatment. In this room the doctors indicate with pencil by marking circles around the various lesions which are to be exposed to the chemical light rays that day. Thus is the progress of each patient watched and directed daily.

From the clinic the patient is conducted to the laboratory for light treatment. Here are eight large 50-ampere arc lamps, each lamp being equipped with four projectors containing lenses and cooling devices to accommodate four patients. Thus 32 patients can be treated at one time, each patient being under the immediate care of a separate nurse who applies the light. Several other lamps are placed in smaller rooms where more privacy is obtained. The current supplied by the city is 500 volts direct. This being too high for safety, is used to actuate a motor which in turn drives a dynamo that delivers a 70-volt direct current. This current supplies the energy for all the apparatus.

With the patient placed on the table, the area which has been pencil-marked by the physician is brought to focus under the light, and with a compressor lens over the lesion, is exposed for one hour and ten minutes. In twenty-four hours a strong reaction is visible where the light has acted, vesicles form which take from six to ten days to heal up. If this exposure has not been sufficiently strong to destroy the active lesion another is given, and so on, one treatment every eight or ten days until the disease is vanquished. If the disease is extensive different regions are exposed daily.

The conditions which yield best to the light treatment are lupus vulgaris and erythematosis, acne, small non-elevated angiomata or port-wine marks, and very superficial epithelioma. For these diseases and conditions the chemical light treatment as carried out here is as near specific as anything medical or surgical can be within the meaning of that word. For ordinary or deep-seated epithelioma the Roentgen rays are used. For this purpose a 20-inch Rumkorff induction coil is provided, with mercury turbine interruptor on the 70-volt direct current. Twenty-minute exposures are made and repeated when reaction permits. Patients suffering from lupus erythematosis are given in addition to light treatment from 20 to 30 centigrams of quinin daily.

The results obtained here can be ascribed to efficient apparatus, and, more important yet, correct technic and patience. The rooms of the institute are open to the physicians of the world, who can see for themselves and judge; nothing is kept hidden. The management of Finsen's Institute desire to have it known that they have no connection whatsoever with a so-called Finsen Institute of America, located, I believe, in Chicago and widely advertised in the daily press.

Albert Soiland, M.D. (Los Angeles).

Marriages

William G. Doern, M.D., to Miss Reeves, both of Fort Madison, Iowa, August 15.

Walter F. McCabe, M.D., to Miss Anna M. Moe, both of Beloit, Wis., August 12.

Thomas Garton Kell, M.D., Pineville, N. C., to Miss Marie Laura Delmas of Pascagoula, Miss., August 9.

Reginald M. Burdon, M.D., Green Bay, Wis., to Miss Louise Lange of Houghton, Mich., August 16.

Louis F. Baker, M.D., to Mrs. Nellie S. Appleby, both of Fitchburg, Mass., in New York City, August 11.

David James Graham, M.D., Edinburgh, Scotland, to Miss Ethyl Gray of San Francisco, in New York City, August 9.

George J. Koch, M.D., to Miss Josephine Fitzmaurice, August 9.

Francis E. King, M.D., to Miss Mary Owens Randall, at Baltimore, August 14.

Treston R. Ayars, M.D., to Mrs. Fannie Hamilton Shedd, both of St. Louis, August 16.

Charles L. Large, M.D., Forest Grove, Ore., to Miss Edna L. Hicks of Fairmount, Minn.

Deacon Steinmetz, M.D., to Mrs. Ellen Fagan Crosby, both of Philadelphia, August 14.

Frank Dyer Sanger, M.D., Baltimore, to Miss Grace Hamilton Hague Cochran, August 9.

George H. Ehrhorn, M.D., Tea, S. D., to Mrs. Florrie B. Dales, at Anniston, Ala., August 3.

Robert Lee Schorr, M.D., to Miss Mabell Stanley Leonard, both of Detroit, Mich., August 23.

Harry C. Parker, M.D., Boston, to Miss Clara Margaret Parker of La Grange, Ill., August 16.

William C. Arons, M.D., Hudson, Wis., to Miss Mary C. MacMurdy of Aitkin, Minn., August 4.

George M. Livingston, M.D., Manistique, Mich., to Miss Mabel A. Joy of Albion, Mich., June 28.

Marcus Harold Merchant, M.D., to Miss Alice Louise Gardner, both of Warren, R. I., August 14.

Charles Wallace Ransom, M.D., Brooklyn, Wis., to Miss Myrtle B. Richards of Beloit, Wis., June 14.

Harry Hamilton Snively, M.D., Columbus, Ohio, to Miss Florence Knowlton of Plymouth, Ohio, August 15.

Harley Sylvester Herrick, M.D., Westford, Vt., to Miss Florence Amelia Holyoke of St. Albans, Vt., August 2.

Lillian B. Eshleman, M.D., Battle Creek, Mich., and Prof. Percy Taylor Magan of Unavara, Madison, Tenn., at Cherokee, Iowa, August 23.

Deaths

Samuel Wilson Trimmer, M.D. Philadelphia College of Medicine and Surgery, 1854, a prominent physician and politician of Luzerne County, Pa., some-time prothonotary and oil inspector of the county; a member of the National Association of Railway Surgeons, Luzerne County Medical Society and Lehigh Valley Medical Society, died at his home in White Haven, July 31, from angina pectoris, after an illness of several weeks, aged 71.

Clarkson C. Schuyler, M.D. Albany (N. Y.) Medical College, 1875, member of the Clinton County Medical Society, for 14 years consulting surgeon to the Troy Hospital, member of the Association of Military Surgeons of the United States, and state forest commissioner from 1893 to 1895, died from cirrhosis of the liver at his home in Plattsburgh, N. Y., August 16, aged 55.

John H. Stringfellow, M.D. Department of Medicine of the University of Pennsylvania, Philadelphia, 1845, known as the father of Atchison, Kan., speaker of the first Kansas House of Representatives, and founder of the *Squatter Sovereign*, the first newspaper published in that state, died at his home in St. Joseph, Mo., July 29, from pneumonia, aged 86.

Henry D. Stauf, M.D. Missouri Medical College, St. Louis, 1885, of St. Louis, who wandered away from home when ill July 28, is supposed to have fallen into the Mississippi River and been drowned on that day, aged 42. His body was taken from the river at Barrow, Tenn., August 12.

Robert Marsena Stone, M.D. New York, 1874; St. Louis College of Physicians and Surgeons, 1884; a member of the American Medical Association; a prominent practitioner of Omaha, who had made a special study of anesthesia for many years, died at his home in Omaha, August 14, from nephritis, after an illness of several weeks, aged 58.

Otto Negelspach, M.D. University of Michigan Department of Medicine and Surgery, Ann Arbor, 1887, was killed instantly at his home in Millersburg, Ohio, August 14, by touching a broken telephone wire which had crossed an electric light wire, aged 37.

Andrew Carr Kemper, M.D. University of Louisville Medical Department, 1866, who served throughout the Civil War as surgeon, for the most part on the staff of General Halleck, died at his home in Cincinnati, August 15, aged 73.

W. Dalton Deshazo, M.D. University College of Medicine, Richmond, Va., 1905, of Stokesdale, N. C., died at the home of J. P. McMichael, near Madison, N. C., August 11, from typhoid fever, after an illness of three weeks, aged 24.

Samuel D. Tracy, M.D. Barnes Medical College, St. Louis, 1899, of Odin, Ill., president of the Southern Illinois Medical Association, died at the Olney Hospital, August 11, from typhoid fever, after a lingering illness, aged 29.

Robert Hugh Cooke, M.D. Starling Medical College, Columbus, Ohio, 1858, a surgeon in the Army during the Civil War, who retired from practice in 1866, died at his home in Grayville, August 6, after a long illness, aged 73.

John Van Vliet, M.D. Ensworth Medical College, St. Joseph, Mo., 1880, died at his home in Wheaton, Kan., August 7, from the effects of carbolic acid self-administered while despondent over long-continued ill health, aged 52.

J. L. Thigpen, M.D. Medical Department of the University of Georgia, Augusta, 1881, died at his home near Pineview, Ga.. August 4, after a period of invalidism, due to cerebral hemorrhage, of four or five years, aged 68.

Francis Marion Setzler, M.D. Medical College of the State of South Carolina, Charleston, 1862, died at his home, near Whitmire, S. C., July 29, from disease of the stomach, after an illness of six months, aged 60.

W. S. Duncan, M.D. Illinois Army Board, 1864, (Years of Practice, Illinois), 1884; assistant surgeon Tenth Illinois Volunteer Cavalry in the Civil War, died at his home in Greenup, Ill., August 2, aged 80.

E. R. Weaver, M.D. Tennessee Medical College, Knoxville, 1892, of Highland Park, Chattanooga, Tenn., died at Erlanger Hospital in that city, August 4, after an illness of five weeks, aged 45.

Kimball David Webster, M.D. Vermont Medical College, Woodstock, 1837, said to have been the oldest practitioner in New Hampshire, died at his home in Gilsum, N. H., August 9, aged 94.

Harriman Couch, M.D. (Years of Practice, Illinois), 1879, said to have been the oldest practitioner of Peoria, Ill., died at St. Francis' Hospital in that city, August 18, after a long illness.

Frederick C. Hall, M.D. Medico-Chirurgical College of Philadelphia, 1894, died at his home in Scranton, Pa., August 14, from septicemia contracted in an operation six years before.

Joseph D. Wade, M.D. Medical College of the State of South Carolina, Charleston, 1857, died at his home in Marshallville, Ga., August 2, after a long period of decline, aged 72.

John H. King, M.D. University of Maryland School of Medicine, Baltimore, 1872, of Pocomoke City, Md., died at Ocean City, Md., August 12, from heart disease, aged 47.

Robert Patterson Robins, M.D. Department of Medicine of the University of Pennsylvania, Philadelphia, 1880, of Philadelphia, died at Sharon, Conn., August 13.

Wilfred J. Labelle, M.D. Laval University Medical Despartment, Quebec, 1895, died suddenly at his home in Swanton, Vt., August 9, from heart disease, aged 33.

John W. Holloway, M.D. University of Louisville Medical Department, 1850, died at his home in Nicholasville, Ky., from senile debility, August 14, aged 82.

Robert J. Clark, M.D. Department of Medicine of the University of Pennsylvania, Philadelphia, 1868, died at his home at Chestnut Level, Pa., August 19.

Nathan M. Scales, M.D. Department of Medicine of the University of Pennsylvania, Philadelphia, 1860, died at his home at Vose, Ky., August 18, aged 67.

Cornelius C. V. Crawford, M.D. Jefferson Medical College, Philadelphia, 1863, of Camp Ground, Pa., died at Atlantic City, N. J., August 16.

D. H. Patchen, M.D. Illinois, 1879, of Fremont, Ind., was found dead in a hotel at Walcott, August 10. The coroner's verdict was suicide.

Samuel Sherbourne, M.D. Long Island College Hospital, Brooklyn, N. Y., 1882, died at his home in Philadelphia, August 14, aged 71.

James A. Murray, M.D. Chattanooga (Tenn.) Medical College, 1894, died at his home in Glenalice, Tenn., August 9, from pneumonia.

George E. Smith, M.D. Medical College of Ohio, Cincinnati, 1862, died at his home in Oberlin, Ohio, August 3.

Samuel J. Brown, M.D. Missouri, 1896, died at his home in Beaumont Station, Mo., August 14, aged 39.

Rudolf Bestle, M.D. Albany (N. Y.) Medical College, 1888, died at his home in Hunter, N. Y., August 9.

I. C. Truett, M.D. (Certificate, Tennessee), 1896, died at his home in Livingston, Tenn., July 29.

Book Notices

TREATISE ON PLAGUE, Dealing with the Historical, Epidemiological, Clinical, Therapeutic and Preventive Aspects of the Disease. By W. J. Simpson, M.D. Cloth. Pp. 466. Price, $5.00. Cambridge: The University Press. 1905.

The contents of the book are divided into four principal parts: history and distribution of plague; epidemiology of plague; plague in the individual; measures for prevention and suppression of plague. There are two appendices, one giving the deaths from plague in India in 1904 and one giving the provisions of the International Sanitary Convention at Paris, 1903. There are maps, charts and illustrations of buboes, etc. "Few thought it possible, when plague broke out in Bombay in 1896 after an absence of 200 years, that the disease would not be controlled, checked and stamped out in a short time. It was a rude awakening when deaths began to mount up to a few thousand to find old scenes associated with plague epidemics reappear. The closed houses, the deserted streets, and nearly half of the population fleeing panic-stricken from the city, testified to the fact that plague had lost none of its old horrors. . . . The next year and every year since 1896, the disease has recrudesced in Bombay, and the number of deaths is fast mounting up beyond the mortality of any epidemics of plague in any single city in the past with the exception of those of Constantinople and Grand Cairo. And still the disease continues. Plague has moreover spread from Bombay to the Bombay Presidency, and from the Bombay Presidency to a large portion of India. Slow in its progress it has steadily advanced; and now the 30,000 deaths from plague which occurred in India in the past year, and which created so much alarm, has reached during the past two years over three-quarters of a million per annum. In 1903 the number of deaths from plague in India was 853,000, and in 1904 it was over a million, being 1,040,429. . . . The total number of deaths in India officially recorded from plague since 1896 was, up to the end of December, 1904, 3,150,000." Do not these statements from the preface come as a shock to most of us? The book is written with the organization of a high grade Indian public health service in mind, which is regarded as essential for the establishment of proper and effective preventive measures. At the same time plague in its various aspects is considered in such a way as to interest and greatly instruct all that are in any way concerned about this disease. The importance from the point of view of a prevention of conjoint action on the part of those engaged in research and of those engaged in administration is clearly recognized and stated. In the seventh century two kings of Erin summoned a council at Temora because the land was not sufficient to support the population. The chiefs decreed that a fast should be observed so that they might with one accord solicit God to remove by some species of pestilence the burthensome multitudes of the inferior people. And a pestilence did come; it removed the authors of the petition, the two kings and a third of the nobles concerned. This sounds passing strange to us at this time, but there are those even now who hold that plagues are necessary to keep down populations that otherwise would perish by hunger. This doctrine is easy-going and would lead to the saving of much trouble; for to prevent the spread of plague in India demands strenuous statesmanship as well as organized sanitary service. In the meantime the condition of the people of India in the worse affected provinces is most deplorable. "It not only claims the deepest sympathy, but also in the interests of humanity imperatively demands the closest attention. . . ." Dr. Simpson's book does not appear to be the product of an alarmist, but of an earnest, practical sanitarian, with broad views, and his treatise should be in the library of all students of preventive medicine.

ACUTE CONTAGIOUS DISEASES. By William M. Welch and Jay F. Schamberg, M.D. Illustrated with 109 Engravings and 61 Full-Page Plates. Cloth. Pp. 781. Price, $5.00. Philadelphia: Lea Bros. & Co. 1905.

This book deals with vaccinia, smallpox, chickenpox, scarlet fever, measles, typhus fever, diphtheria and disinfection, i. e., the diseases that by virtue of extreme contagiousness require isolation and treatment in special hospitals. Nearly one-half of the 781 pages are given over to the discussion of smallpox and allied subjects, e. g., vaccinia and varioloid diseases in lower animals. Vaccination in all its phases is considered with great thoroughness. Dr. Welch's long personal experience with smallpox is drawn on freely and instructively, and nothing but satisfaction can be expressed with the presentation of the various topics regarding it. Our knowledge concerning this disease is here summarized in an attractive and serviceable manner and with interesting references here and elsewhere as well to the older literature on the subjects discussed. We believe, however, that the authors are a little prematurely skeptical concerning the value of the red-light treatment of smallpox advocated by Finsen. The necessity of actually demonstrating that the actinic rays are excluded completely in so-called red-light wards before any opinion may be formed as to the value of the treatment is not emphasized; furthermore, nothing is said of the limitations of the treatment outlined by Finsen, namely, that it must be begun before the fourth or fifth day of the disease.

Scarlet fever is given adequate consideration. No definite stand is taken as to the vexed question of the etiology of this disease. Most of the advocates of the streptococcal nature of the disease are cited, with some notable omissions (Moser and others). The views as to the value of antistreptococcus serum in the treatment appear conservatively sane. The extensive literature in regard to scarlet fever has been reviewed with great care. About 90 pages are given to the treatment of diphtheria. The antidiphtheric serum is given first place and a large amount of statistics bearing on the results are presented. The last chapter deals with disinfection. The illustrations are mostly of the various eruptions and rashes of the contagious disease. In the index we note that the names of the authors quoted in the text are omitted. The reviewer believes that it is of advantage in works of this nature to index the names of authors. The book is recommended heartily to physicians for guidance and information with respect to the important diseases of which it treats.

A Manual of [illegible] s and Practitioners. By H. Jellett, B.A [illegible], with the assistance in special subjects [illegible] F.R.C.P.I., Medical Super- [illegible] Drury, M.D., F.R.C.P.I., Dublin; T. G. Moorhead, [illegible] Royal City of Dublin Hospital, Dublin; [illegible] Pathologist to the Rotunda Hospital and to Dublin. With 476 Illustrations. Cloth. New York: William Wood & Co.

In times past it was the popular belief that all things British gave evidence of their insular opinions. The work of Henry Jellett, of Dublin, would most emphatically refute any such opinion, if held. A perusal of his manual of obstetrics will impress all with the cosmopolitan character of the presentation of the material embodied in the volume. We may say with positiveness that no British obstetric writer has so broadly interpreted the work of the foreign authorities as has Dr. Jellett; the recognition of American writers is particularly frequent. From first to last one finds constant pleasure in reading the various topics. The style is easy, entertaining, and the writer has not entered into pedantic discussions; the matter is sufficiently concise for students, yet amply broad for the practitioner; the work has been so brought up to date that the latter will find much to attract him, while the former will receive a thorough foundation in the principles and practice of obstetrics. To cover the innumerable virtues of the book would necessitate a mention of nearly every topic discussed. The parts of the volume which deserve special commendation, if they may be given a preference, are the physiology of pregnancy, labor and the puerperium, and the consideration of chorio-epithelioma in the pathology of pregnancy. Special mention must be made of the obstetric operations, the presentation of which is eminently fair, free of all dogmatism of statement, and abundantly adequate for the needs of those for whom the manual is primarily intended. Certain aspects of the volume appear faulty to an American. We can not agree with Dr. Jellett in his recommendation of the Dublin method of conducting the third stage of labor if he has correctly described it; the technic of the Dublin method is not that of Credé; therefore, we can not accord priority to the rotunda for the proper technic of fundal placental expression, for Credé has suggested a material improvement. Dr. Jellett describes the Dublin method as follows: The ulnar surface of the hand should be placed behind the uterus, and expression be consummated by a downward and backward movement as the uterus is compressed from side to side. We believe this is dangerous teaching for two reasons: First, the "side-to-side" compression means the production of an actual cavity within the uterus, which does not physiologically exist, with the possibility of causing an aspiration of air—a danger which he himself mentions in the discussion; secondly, the more valid objection lies in the fact that lateral compression may produce a dangerous injury to the tubes and ovaries. We believe traction on the cord deserves no mention in a modern obstetric work as a means of delivering the placenta beyond a most unequivocal condemnation. We regret the omission of all mention of the disposal of the pubic hair in his discussions of surgical cleanliness; to say the least it is inconsistent to demand the routine shaving in gynecologic work and to omit its mention in connection with obstetric surgery. In the discussion of the treatment of eclampsia we feel that too great stress is laid on the administration of sedatives and emptying the uterus without a direct correlation of the eliminative treatment. The exhibition of chloral, bromids, morphia, and chloroform are not curative measures, are merely empirically applied expedients. Elimination is the *sine qua non* and should be most prominently brought forward in connection with all other therapeutic measures until we have a specific therapeusis. The treatment of asphyxia neonatorum is insufficiently stated, being practically limited to Schultze's swinging and Hall's maneuver, two methods formerly much in vogue, and the former still recommended with unvarying regularity. The dangers of Schultze's swinging—the rapid cooling of the body (retention of heat being a most essential requisite), the great danger of producing fractures, if not mortal injuries, the liability of causing aspiration of mucus, and, finally, the necessity of violent exertions on the part of the manipulator, leave little to recommend the procedure. We find no mention of Byrd's, Bruist's, Prochownik's, Laborde's methods, and the most convenient plan of rhythmic compression of the chest while the trunk of the child is submerged in a warm bath. The illustrations generally depict the descriptions of the text and are well executed; they truly illustrate the work.

Multiple [illegible] vestigation Into the Nature [illegible] Sidis, M.A., Ph.D. (Harvard), [illegible] tion and Psychopathologic R [illegible] A.B. (Yale), M.D. Cloth. Pp. [illegible] D. Appleton & Co. 1905.

This work is in three parts. In the first, by Dr. Sidis, the subject of personality is treated, the author going through the various types of life to illustrate the development of the individual consciousness. This, of course, is largely psychologic, the view being held that as the organizations pass upward on the scale they become more complex and the possibilities of dissociation more numerous. The constitution of the individual mind, according to the author, is made up of many subordinate individual minds less complex in their nature. There may be, he says, "as many different personalities, parasitic or secondary, as there are possible combinations and disaggregations of psychophysiological aggregates. There may, therefore, be different forms of secondary consciousness or of multiple personality. These may be of a simultaneous character or one of alternation. The personalities may appear side by side or they may appear alternately. The play of personality may be of a dramatic character, the characters and personality appearing on the scene of consciousness like so many actors, the whole appearing as a play of many different persons." In other words, passing upward from the simplest individual consciousness of the lowest organism with a neuron the author finds the highest complications of neurons still a bundle of disagreeable consciousnesses or personalities. Thus in certain conditions and in certain peculiarly constituted individuals, the whole higher system of cells and association fibers may be switched off from its normal psychologic functioning corresponding to its past life and experience into something quite different so far as the consciousness or sense of identity of the individual is concerned. Recollections may be suppressed, new combinations of the highest association centers be brought into play and a complete break in the individual life be accomplished more or less completely or permanently. This is, perhaps, not an adequate explanation of the author's ideas, but it comes as near to it as is possible without going very much more extensively into their interpretation. The second part of the book, by Drs. Sidis and Goodhart, gives their observations of the case of the Rev. Mr. Hanna, which was carefully studied by them several years ago. It is an interesting account and probably the most thorough study of any such instance that has ever been made, but it does not seem to our mind to be altogether the best one to illustrate some of the phases of so-called multiple personality. The third part, by Dr. Sidis, is entitled "Consciousness and Multiple Personality," and goes at length into the pathologic psychology of the morbid conditions here discussed. The reader will find this part of the work interesting and suggestive in many ways, and the explanations given are, perhaps, as satisfactory as is possible with our present knowledge, but they do not appear to us to clear up the subject entirely. One can easily conceive of a subconscious personality under many normal conditions. Our common automatic movements naturally suggest it, and it may come more visibly into play under certain quasi pathologic conditions. The complete change of personality, however, many instances of which have been reported where the subject apparently takes up an entirely distinct and seemingly normal existence, is not so easily explainable. If we can exclude delusions, epileptic states which are themselves somewhat obscure and hysterical deception in these cases, there is left a rather difficult problem. The subject, however, is well studied in many of its aspects by the author and the work can be profitably pursued by anyone interested in such studies.

Practical Pediatrics. A Manual of the Medical and Surgical Diseases of Infancy and Childhood. By Dr. E. Graetzer, Editor of the *Centralblatt fur Kinderheilkunde* and the *Excerpta Medica*. Authorized Translation, with Numerous Additions and Notes, by Herman B. Sheffield, M.D., Instructor in Diseases of Children, and Attending Pediatrist (O.P.D.). Flexible Cloth. Pp. xii-544. Price. $3.00 net. Philadelphia. F. A. Davis Co.

The stated purpose of this volume is "to be brief and to the point, and contain as many parenthetical points as possible, so as to permit at a glance of the selection of the more important from the less important material." A book of this kind is usually justly subject to adverse comment because it recounts symptoms and remedies without discussing fundamental conditions and treatment principles; the result is a jumble of details difficult to assimilate and supplying no knowledge of relative values; accurate and complete, perhaps, but neither clear nor discriminating; really "practical," therefore, only in appearance. The present volume, however, is singularly free from the faults of its class. Of course, this book presupposes familiarity with disease in adults, and naturally it will not take the place of a thorough treatise on diseases of children. The section on the now very important subject of modification of cow's milk is notably unsatisfactory, but the chapter on palatable prescribing is valuable. With Dr. Sheffield's timely comments and addenda the book is generally up-to-date and extensive in its range.

Lehrbuch der Kinderkrankheiten für Arzte und Studireende von Dr. Adolf Baginsky, Professor der Kinderheilkunde an der Universität Berlin. Achte völlig neu durchgearbeitete und verbesserte Auflage. Paper. Pp. 1168. Leipzig. Verlag von S. Hirzel, 1905.

This classic on children's diseases appears in its eighth edition. Baginsky's book represents his own vast experience together with a painstaking study of the literature. The new edition follows very shortly on the seventh, indicating the large circulation which the book enjoys. Nearly every chapter gives evidence of alterations and additions. The subject matter is thoroughly reliable and altogether up to date. It would be difficult to select any subject which is not carefully and exhaustively considered. The subjects of diphtheria, typhoid fever, gastrointestinal diseases and the diseases of the new born are especially attractive. They contain the results of the author's extensive personal observations and clinical studies. The study of infant feeding is not treated in a dogmatic way, and the various plans of feeding which are in vogue in the different centers are discussed at some length. He advocates pure milk, properly diluted, whatever method be employed. The proprietary foods are mentioned and methods of administering them discussed, though their use is not advised.

Malformations of the Genital Organs of Woman. By Ch. Debierre, Professor of Anatomy in the Medical Faculty at Lille. With 85 Illustrations. Translated by J. Henry C. Simes, M.D., Emeritus Professor of Genito-Urinary and Venereal Diseases in the Philadelphia Polyclinic. Cloth. Pp. 182. Price, $1.50 net. Philadelphia: P. Blakiston's Son & Co. 1905.

This work is of little practical use to the general practitioner and perhaps is not intended for him. The conditions it describes are not often met in practice. Many of the anomalies noted are of medicolegal importance, but the quotations from French non-medical writers might well have been omitted.

Queries and Minor Notes

Anonymous Communications will not be noticed. Queries for this column must be accompanied by the writer's name and address, but the request of the writer not to publish *name or address* will be faithfully observed.

METHOD OF GIVING YEAST IN TUBERCULOSIS.

———, Aug. 15, 1905.

To the Editor:—Will you kindly enlighten me as to the proper way to administer yeast in the treatment of tuberculosis? Your review of article in the London *Lancet*, by W. R. Huggard, appearing in The Journal, July 1, 1905, says nothing about doses, time of administering, etc. If brewers' yeast is not accessible, could ordinary home-made yeast be used safely? J. W.

Answer.—It has not been definitely determined just what is the best way to administer yeast in the treatment of tuberculosis. Huggard and Morland have given the dried yeast suspended in milk or water, which may be drunk during the meal. Their doses have varied from three to ten grams (a piece the size of a filbert to that of a walnut) twice daily. A good variety of common pressed yeast may be used. The German *Presshefe* is preferred by some. More recently Huggard and Morland have been giving ten grams every five days as an experiment. This was suggested to them by the observation that the opsonic power of the blood (see Journal A. M. A., 1904, vol. 42, p. 1689) often falls somewhat immediately after the ingestion of yeast, but later rises above the normal level, and stays there for several days. They believe that the beneficial results of yeast are attributable to this rise in the opsonic power of the blood, which is a direct aid to phagocytosis. We would advise that too much dependence be not placed on the treatment till further evidence be produced regarding its true value.

State Boards of Registration

COMING EXAMINATIONS.

Wyoming State Board of Medical Examiners, State Capitol, Cheyenne, Wyo., September 6. Secretary, S. B. Miller, Laramie.

Massachusetts Board of Registration in Medicine, State House, Boston, September 12-13. Secretary, E. B. Harvey, Boston.

Michigan June Report.—Dr. B. D. Harison, secretary of the Michigan State Board of Registration in Medicine, reports the examination held at Lansing, June 13, 1905. Sixty-eight candidates were examined, of whom 67 passed and 1 failed. The following colleges were represented:

PASSED.

College.	Year Grad.	Per Cent.
University of Michigan	(1905)	89.84, 88, 84.94, 91.10, 87.42, 88.52, 88.26, 78.31, 86.73, 91.47, 87.89, 88.57, 88.31, 87.52, 89, 87.57, 89.73, 87.36, 92.89, 86.52, 86.31, 85.73, 86, 88.42, 89.94, 83.47, 85.26, 86.42, 90.21, 85, 88.52, 90.36, 83, 84.05, 90.68, 86.52, 83.26, 86.36, 86.26, 82.10, 83.36, 89, 90.63
	(1904)	88.42, 83.94, 88.57, 85.10, 88.84, 87.47, 84
	(1903)	87
University of Michigan. Homeo. Dept.	(1905)	88.57, 83.78, 84.57
	(1903)	84.89
Woman's Med. Coll., Philadelphia	(1904)	91.89
College of P. & S., Chicago	(1898)	75.42
	(1896)	75.21
Kentucky School of Medicine	(1904)	85.10
Detroit Coll. of Med	(1905)	70.42, 80.26, 79
	(1902)	85.89
American Med. Miss. Coll.	(1901)	87.84, 83.94
Royal University of Turin, Italy	(1895)	84.57
New York Homeo. Med. Coll.	(1905)	86.21

FAILED.

College.	Year Grad.	Per Cent.
College of P. & S., Chicago	(1903)	66.31

The general average attained by representatives of the University of Michigan, excluding graduates of the homeopathic department was 87.1.

Ohio June Report.—In the report of the examinations held in June and published in The Journal, Aug. 19, 1905, the percentage of 88 attained by one graduate of the Western Reserve University was omitted. The general average attained by representatives of Cleveland College of Physicians and Surgeons was given as 82 when it should have been 89.14.

The Public Service

Army Changes.

Memorandum of changes of stations and duties of medical officers, U. S. Army, week ending Aug. 19, 1905:

Rand, I. W., asst.-surgeon, granted leave of absence for one month, with permission to apply for an extension for one month.

Carter, Edward C., surgeon, leave of absence extended one month.

Heard, George P., asst.-surgeon, having reported arrival at San Francisco, Cal., from Manila, P. I., will take station at Army General Hospital, Presidio of San Francisco, Cal.

Glennan, James D., surgeon, and Darnall, C. R., asst.-surgeon, detailed members of examining board at Fort Monroe, Va.

Davidson, W. T., asst.-surgeon, relieved from duty at Army General Hospital, Presidio of San Francisco, and ordered to Presidio of Monterey, Cal., for temporary duty.

Gibner, Herbert C., and Bruns, Earl H., asst.-surgeons, relieved from duty with troops now on duty at the Sequoia and Yosemite National Parks, Cal., and to accompany Fifteenth Infantry to Philippine Islands. On arrival at Manila to report to commanding general, Philippines Division, for assignment to duty.

Cornman, Leighton R., contract surgeon, ordered from Army General Hospital, Presidio of San Francisco, to his home, Lowell, Mass., for annulment of contract.

Clayton, George R., contract surgeon, granted leave of absence for one month.

Lauderdale, C. E., dental surgeon, granted one month's leave of absence.

Stearns, Charles H., contract surgeon, returned from leave of absence to duty at Fort Monroe, Va.

Hallwood, J. B., contract surgeon, returned from leave of absence to duty at Fort Leavenworth, Kan.

Kieruluff, H. Newton, contract surgeon, relieved from further duty in the U. S. Transport Service, and ordered to duty in Philippine Islands.

Lemmon, Robert, contract surgeon, left Fort Preble, Maine, and arrived at Fort McKinley, Maine, for duty.

Wertenbaker, C. I., contract surgeon, left Madison Barracks, N. Y., en route to Ogdensburg, N. Y., with Third Battalion, Twenty-third Infantry.

Dougherty, J. C., contract surgeon, returned to duty at Fort Slocum, N. Y., from detached service at Fort Monroe, Va.

Byars, C. R., contract surgeon, returned to duty at Fort Sam Houston, Texas, from temporary duty at Fort McIntosh, Texas.

White, J. S., contract surgeon, left Fort Harrison, Mont., for his proper station, Fort Snelling, Minn.

Lowe, Thomas S., contract surgeon, will accompany Third Squadron, Thirteenth Cavalry, to Fort Sill, Okla., on completion of which duty will avail himself of leave of absence.

Navy Changes.

Change in the Medical Corps, U. S. Navy, for the week ending Aug. 19, 1905:

Brooks, F. H., asst.-surgeon, ordered to the Naval Hospital, New York.

Dunbar, A. W., surgeon, detached from the *Wyoming* and ordered home to wait orders.

Ames, H. E., medical inspector, detached from the Naval Academy and ordered to the *Maine*, for duty as fleet surgeon of the North Atlantic Fleet.

Lewis, D. O., medical inspector, detached from duty on the *Chicago* as fleet surgeon of the Pacific squadron and ordered home to wait orders.

Beyer, H. G., medical inspector, detached from the Naval Medical School, Washington, D. C., and ordered to special duty in connection with an international congress, Paris, France, and thence to the Asiatic fleet, for duty as fleet surgeon.

Dickson, S. H., medical inspector, detached from the *Maine* and from duty as fleet surgeon of the North Atlantic fleet, and ordered home to wait orders.

Biddle, C., surgeon, detached from duty as fleet surgeon of the Asiatic fleet, and ordered to the *Chicago* for duty as fleet surgeon of the Pacific squadron.

Berryhill, T. A., surgeon, ordered to Washington, D. C., September 1, for duty as instructor at the Naval Medical School, Washington, D. C.

Gatewood, J. D., surgeon, ordered to Washington, D. C., Aug. 22, 1905, for duty as instructor at the Naval Medical School.

Benton, F. L., P. A. surgeon, ordered to the Naval Hospital, New York, N. Y., for duty.

Murphy, J. A., P. A. surgeon., detached from the Naval Medical School, Washington, D. C., and ordered to the *Des Moines*.

Public Health and Marine-Hospital Service.

List of changes of station and duties of commissioned and noncommissioned officers of the Public Health and Marine-Hospital Service for the seven days ending Aug. 16, 1905:

Sawtelle, H. W., surgeon, leave of absence granted him for one month from July 21, 1905, amended so as to be for twenty-three days.

Sawtelle, H. W., surgeon, to proceed to Norfolk and other points in state of Virginia for special temporary duty.

Cofer, L. E., P. A. surgeon, to proceed to Hile, T. H., for special temporary duty.

Lavinder, C. H., P. A. surgeon, to proceed from Gulfport, Miss., to New Orleans, La., and report to Surgeon J. H. White for special temporary duty.

von Ezdorf, R. H., P. A. surgeon, relieved from duty in the Canal Zone and directed to proceed to New Orleans, La., and report to Surgeon J. H. White for special temporary duty.

King, W. W., P. A. surgeon, to proceed to San Juan, Porto Rico, for special temporary duty.

Goldberger, Joseph, P. A. surgeon, to proceed from Mansfield to Alexandria, La., for [illegible]

Stimson, A. M., [illegible] letter of July 10, 1905, amended so a[illegible]sense for seventeen days instead of one month and fourteen days.

Ebert, H. G., asst.-surgeon. Department letter of July 13, 1905, granting him leave of absence for a period of two months from Aug. 4, 1905, revoked.

Addis, W. E., acting asst.-surgeon, to proceed to Jackson, Miss., and report to P. A. Surgeon G. B. Young for temporary duty.

Cleaves, F. H., acting asst.-surgeon, granted leave of absence for one day, Aug. 3, 1905.

Gray, R. H., acting asst.-surgeon. Department letter of June 24, 1905, amended so as to grant leave of absence for twenty-five days from July 6, instead of thirty days.

Houghton, M. W., acting asst.-surgeon, granted leave of absence for one day, Aug. 31, 1905.

Kennard, K. S., acting asst.-surgeon. Department letter of July 26, granting him leave of absence for a period of twenty-one days from Aug. 7, 1905, cancelled by Department letter of Aug. 11, 1905.

Nall, R. P., acting asst.-surgeon, to proceed to Jackson, Miss., and report to P. A. surgeon G. B. Young for temporary duty.

Stuart, A. F., acting asst.-surgeon. Department letter of May 27, 1905, amended so as to grant him leave of absence for twenty-eight days instead of thirty days, from July 3, 1905.

Holsendorf, B. E., pharmacist, to proceed to San Juan, Porto Rico, for special temporary duty.

Health Reports.

The following cases of smallpox, yellow fever, cholera and plague have been reported to the Surgeon General, Public Health and Marine-Hospital Service, during the week ended, Aug. 21, 1905:

SMALLPOX—UNITED STATES.

California: Los Angeles, July 22-August 8, 5 cases.
Florida: Jacksonville, July 22-August 5, 2 cases.
Illinois: Chicago, August 5-12, 6 cases; Danville, July 29-August 8, 1 case.
Indiana: South Bend, July 29-August 12, 2 cases.
Kentucky: Lexington, July 22-August 3, 3 cases.
Louisiana: New Orleans, July 29-August 12, 5 cases.
Massachusetts: Lowell, August 5-12, 3 cases.
Missouri: St. Joseph, July 22-29, 1 case.
New Hampshire: Nashua, July 23-August 12, 3 cases.
New York: New York, July 29-August 5, 3 cases, 1 death.
Ohio: Cincinnati, August 3-12, 5 cases.
Pennsylvania: August 5-12, Altoona, 1 case; York, 2 cases.

SMALLPOX—INSULAR.

Philippine Islands: June 3-10, 1 case.
Porto Rico: San Juan, June 1-30, present.

SMALLPOX—FOREIGN.

Brazil: Bahia, July 1-8, 1 death; Rio de Janeiro, July 2-9, 18 cases, 1 death.
Chili: Iquique, July 15-22, 1 case.
France: Paris, July 15-22, 32 cases, 2 deaths.
Great Britain: July 15-22, Birmingham, 3 cases; Bristol, 1 case; London, July 8-15, 2 cases; Manchester, July 15-22, 1 case; New Castle-on-Tyne, July 8-22, 5 cases; Nottingham, July 22-29, 1 case.
India: Calcutta, June 24-July 8, 7 deaths; Madras, July 1-7, 3 deaths.
Italy: Catania, July 21-27, 2 deaths.
Russia: Moscow, July 8-22, 7 cases, 9 deaths; Odessa, July 15-22, 3 cases.
Turkey: Constantinople, July 16-23, 3 deaths.

YELLOW FEVER—UNITED STATES.

Louisiana: Sellers, August 7, 4 cases; Shreveport, August 1-9, 2 cases; New Orleans, July 21-August 11, 720 cases, 118 deaths.

YELLOW FEVER—FOREIGN.

Brazil: Rio de Janeiro, July 2-10, 37 cases, 12 deaths.
Guatemala: Livingston, July 15-22, 2 deaths; Zacapa, August 3, 9 deaths.
Honduras: Choloma: July 26, 10 cases, 4 deaths; Puerto Cortez, July 1-24, 25 cases, 6 deaths; San Pedro, July 26, 100 cases, 19 deaths.
Mexico: July 30-August 5, Coatzacoalcos, 1 case; Vera Cruz, 4 cases, 1 death.
Panama: July 18-25, Colon, 6 cases, 2 deaths; Panama, 8 cases, 2 deaths.

CHOLERA.

India: Calcutta, June 18-July 8, 20 deaths.

PLAGUE—INSULAR.

Philippine Islands: June 3-10, Cebu, 4 cases, 3 deaths; Manila, 1 case, 1 death.

PLAGUE—FOREIGN.

Australia: Maruborough, June 10-17, 10 cases, 7 deaths.
Brazil: Rio de Janeiro, July 8-16, 2 cases.
India: General, June 18-24, 5,078 cases, 4,563 deaths; Calcutta, June 18-July 8, 56 deaths.

Medical Organization

Georgia.

Bartow County Medical Society.—This society has perfected its organization and has adopted the constitution and by-laws as component branch of the state association. Dr. Alfred T. Calhoun, Cartersville, is president, and Dr. Oliver H. Buford, secretary.

Clarke County Medical Society.—Physicians of the county met at Athens, June 28, and with the assistance of Dr. Samuel C. Benedict, Athens, councilor for the eighth district, organized a society on the standard plan and elected the following officers: Dr. James C. Bloomfield, president; Dr. Daniel D. Quillian, vice-president; Dr. Henry M. Fullilove, secretary-treasurer, and Drs. Isham H. Goss, Samuel H. Dillard and —Echols, censors, all of Athens, Ga.

Cobb County Medical Society.—This society was organized in Marietta the last week in July with ten charter members and the following officers: President, Dr. Charles T. Nolan, Marietta; vice-president, Dr. E. M. Bailey, Acworth; Dr. William C. Humphries, Acworth, secretary and treasurer, and Drs. J. G. Malone, William A. Kemp, Marietta, and J. E. Lester, Kennesaw, censors.

Jackson County Medical Society.—At a meeting called at Jefferson, August 9, by Dr. William B. Hardman, Harmony Grove, councilor for the ninth district, the physicians of the county organized a society on the standard plan with the following officers: Dr. J. C. Bennett, Jefferson, president; Dr. Leonard J. Sharp, Converse, vice-president; Dr. John A. Bryan, Pendergrass, secretary, and Dr. Albert D. White, Pendergrass, treasurer.

Illinois.

Boone County Medical Society.—Physicians of the county met in Belvidere, July 14, and organized a medical society with the following officers: President, Dr. Robert W. McInnes; vice-president, Dr. Daniel E. Foote; secretary, Dr. R. Boyd Andrews, and treasurer, Dr. John B. Leitzell, all of Belvidere.

Indian Territory.

Indian Territory Medical Association.—At a conference July 13 in Oklahoma City, between committees representing both the Oklahoma and Indian Territory medical associations, with a view to the union of the two organizations when statehood is secured, it was decided to hold a joint meeting at Oklahoma City, May 8, 1906. Dr. William E. Dicken, Oklahoma City, was chosen president, and Dr. LeRoy Long, South McAlester, I. T., secretary, of the joint session.

Kansas.

Cowley County Medical Society.—The physicians of Cowley County met at Winfield, July 13, and with the aid of Dr. Oliver J. Furst, Peabody, councilor for the fourth district, organized a society on the standard plan with a charter membership of 14. Dr. James W. Sparks, Arkansas City, was elected president; Dr. Leon Jacobus, Winfield, vice-president; Dr. Ernest F. Day, Arkansas City, secretary, and Dr. H. L. Snyder, Winfield, treasurer. A preliminary meeting was held June 24 in Winfield.

Kentucky.

Boone County Medical Society.—This society met at Burlington, July 23, and adopted a constitution and by-laws.

Madison County Medical Society.—At the meeting of this society in Richmond, July 22, Dr. Frank H. Clarke, Lexington, president of the Kentucky State Medical Society, and Dr. Isaac A. Shirley, Winchester, made addresses on "Medical Organization."

Missouri.

Worth County Medical Society.—On July 12 Dr. E. H. Miller, councilor of the third district, met the physicians of the county at Grant City and assisted in the organization of a county society on the standard plan. Dr. Oliver P. M. Mills, Grant City, was elected president; Dr. E. Paulus Nesbitt, Sheridan, vice-president; Dr. J. K. Phipps, Grant City, secretary, and Dr. J. F. Bove, Allendale, treasurer.

Pennsylvania.

Clinton County Medical Society.—At the meeting held July 21, at Lock Haven, the committee appointed at the last meeting to submit a report on the matters outlined in Dr. McCormack's address, reported, recommending a uniform fee bill; the adoption of some system of delinquents throughout the county; minimum fee for examining applicants for life insurance; a definite understanding about night calls, and fee for same; the holding of clinics at the hospital at each meeting of the society; a definite understanding as to what constitutes contract practice and rules governing the same; that all professional positions shall be paid according to regular fee bill rate, and the adoption of a resolution instructing the delegates to the state convention to concur in any movement tending to the unification of the profession in the state. The report was adopted and a committee consisting of Drs. Francis [illegible]ll, Lock Haven; C. L. Fulmer, Renovo, and Saylor J. McGhee, Mill Hall, was appointed to carry out the recommendations.

South Carolina.

Florence County Medical Society.—This society, at its meeting in Florence, July 10, elected Dr. N. W. Hicks, Florence, president, and adopted the by-laws suggested for county societies by the American Medical Association.

Therapeutics

[It is the aim of this department to aid the general practitioner by giving practical prescriptions and, in brief, methods of treatment for the diseases seen especially in every-day practice. Proper inquiries concerning general formulae and outlines of treatment are answered in these columns.]

Administration of Digitalis.

A Hecht, in *Amer. Jour. Med. Sciences*, states that in the treatment of diseases of the heart it is necessary not only to strengthen the heart muscles, but to keep up the patient's nutrition. For this reason drugs that tend to upset the patient's digestion must be avoided. In this connection he mentions digitalis as a preparation which is especially liable to disturb the stomach when it is in an atonic condition, as this drug is likely to remain in the stomach for a considerable length of time and to produce nausea. On this account he recommends that it be prescribed with agents which tend to counteract this tendency. The author recommends the following formula:

℞.	Pulv. digitalis			
	Quin. hydrochlor., āā	gr. xx	1	30
	Ext. nucis vom	gr. iv-vii		25-.45

M. Ft. capsulæ No. xxx. Sig.: One capsule three times a day.

H. O. Hall, in *Amer. Medicine*, calls attention to the fact that digitalis may cause delirium and hallucinations which are sometimes attributed to the disease affecting the patient instead of to the digitalis. He, therefore, states that in all cases in which delirium occurs in patients suffering from heart diseases, it should be decided that the toxic effect of digitalis is not a factor in the production of these symptoms. This can be done by attention to the elimination, as digitalis is cumulative in action.

In cases of cardiac dropsy the following combination is recommended by Beasley:

℞.	Infusi digitalis	ʒi	4	
	Potass. acetatis	gr. x		65
	Tinct. opii	m. v		30
	Aquæ chloroformi q. s. ad	℥ss	15	

M. Sig.: To be taken at one dose and repeated three times daily.

For nervous palpitation he recommends the following:

℞.	Tinct. digitalis	m. v		30
	Syr. aurantii	ʒi	4	
	Acidi hydrocyanici dil	m. ii		12
	Aquæ camphoræ q. s. ad	℥i	30	

M. Sig.: At one dose and repeat once in four hours if necessary.

A combination of digitalis, scilla and hydrargyrum, for the treatment of cardiac insufficiency, accompanied by edema and dropsy, is as follows:

℞.	*Pulv. digitalis*			
	Pulv. scillæ			
	Pil. hydrarg., āā	gr. i		06
	Ext. hyoscyami	gr. ii		12

M. Ft. pillula No. i. Sig.: One such pill twice daily.

The following combination is sometimes of value in heart cases:

℞.	Tinct. digitalis	m. x		65
	Spts. chloroformi	m. xv	1	
	Inf. gentianæ co. q. s. ad	℥i	30	

M. Sig.: At one dose and repeat three times daily. Or:

℞.	Tinct. digitalis	m. v		30
	Spts. glycerylis nitratis (1 per cent.)	m. i		06
	Tinct. strophanthi	m. iii		20
	Caffeinæ citratæ	gr. i		06
	Spts. arom. q. s. ad	ʒi	4	

M. Sig.: At one dose in a wineglass of water and repeat two or three times a day.

Lobar Pneumonia in Children.

Lobar pneumonia in infants, according to Koplik, in *Boston Med. and Surg. Jour.*, differs in children as compared to adults in that double pneumonia is less frequent in children and pneumonia of the upper lobes is more frequent. The treatment should be outlined in much the same manner as in other infectious diseases or in typhoid fever.

The temperature requires treatment according to the mischief it is doing. Some infants bear high temperature remarkably well, while others do not. Hydrotherapy is the sheet anchor in the treatment of temperature. And in its application it must be kept in mind that the Brand bath or the cold bath are second in importance to the milder measures of sponging or to the application of cold compresses wrung out of water at a temperature of from 75 to 80 F. Infants, as a rule, bear the cold bath very badly and when the reaction is delayed it is difficult, particularly in bottle-fed infants, to rouse them out of the depression caused by it. The author applies a definite index for hydrotherapy in these cases. If a child does not react from a cold sponge, a lukewarm sponge is applied, and in some infants it is impossible to sponge at all. In such cases he recommends compresses, wrung out of water at a temperature of from 75 to 80 F. and applied from the neck to the umbilicus.

The heart should always be supported if necessary. Children above 5 years of age require but little support for the heart, as a rule, while those under 5 frequently require active support.

Alcohol and digitalis are the best remedies in supporting the heart in lobar pneumonia in infants, using a reliable tincture of digitalis and alcohol in the form of whisky, which is much preferable, in the author's opinion, to brandy, and it should not be given in too large doses on account of the danger of upsetting the stomach. If cyanosis be present, showing the strain on the right ventricle, nitroglycerin is regarded as the most useful remedy, given in doses ranging from 1/100 to 1/150 grain (.0006-.0004) every few hours. In younger children a smaller dose is required. He pleads for greater caution in the use of strychnia in pneumonia on account of the dangers from strychnia poison and also because of the lack of knowledge as to its exact action. It should not be used in nervous children who, without its use, show tremors and unrest due to toxemia and high temperature. The nutrition of the patient is by far the most important thing to be considered in this disease. Water should be given frequently, if the tongue is dry, in teaspoonful doses, perhaps every half-hour, if it does not disturb the child too much. The hourly system of stimulation is to be condemned. The medicines and food should be given at about the same time if it can be so arranged, so as to disturb the patient as little as possible. If these intervals can be lengthened to every three hours so much the better for the patient, for rest is an important element.

[In bottle-fed infants and in young children it is often unwise to give food and medicine at the same time, as dislike for the medicine may cause the child to refuse to take the necessary nourishment.]

He has not seen much benefit from the use of oxygen. The room should be kept at a temperature of from 67 to 68 F. and well ventilated; it should be quiet and isolated.

Complications must be watched for. If during the course of the disease a high temperature reigns (105° F.) for any length of time, the ears of the patient must be examined, and if the temperature does not drop at the end of seven or eight days, the chest should be examined for effusion, and if that is absent, examine the heart carefully. The cough should be controlled and, if necessary, codein may be used, or paregoric or the wine of opium, rarely morphin or the stronger preparations of opium. In younger children tympanitis is troublesome and for its relief a calomel purge is of service.

Tympanitis embarrasses the heart (and by some authorities produces atelectasis of the lungs) and calomel relieves the condition when given in five-grain (.30) doses for a young child. Ordinarily, one-half grain doses (.03) repeated every two hours will suffice.

[A warm mustard bath will often aid in giving relief when tympanites is present, especially if the bath be preceded by a colon flushing with warm water.]

Collapse is treated by warmth to the body and the internal administration of camphor and nitroglycerin.

Conjunctivitis.

In the treatment of chronic catarrhal conjunctivitis, the *Internat. Jour. of Surgery* recommends removal of the cause, the use of glasses to remove the eyestrain. Lachrymal and nasal troubles should be corrected. If atmospheric conditions are the cause a change of climate is recommended. Sometimes the occupation by working in irritating vapors produces this condition. After the cause has been removed the conjunctiva becomes normal, as a rule. In some cases a stimulating astringent is necessary. For this purpose the following combination is recommended:

℞. Zinci sulphatis........................gr. i |06
Aquæ dest ....℥i 30|

M. Sig.: A few drops to be instilled into the eye. Or:

℞. Acidi borici........................gr. xv 1|
Aquæ dest ....℥i 30|

M. Sig.: Use as an eye lotion. Or:

℞. Acidi tannici........................gr. x |65
Glycerini ....℥i 30|

M. Sig.: To be applied locally to the conjunctiva. Or:

℞. Argenti nitratis....................gr. ss |03
Aquæ dest ....℥i 30|

M. Sig.: Apply locally with an applicator.

Other astringents such as copper sulphate or alum may be lightly applied to the everted lid every other day. Ointments of mercury are also of service as follows:

℞. Ung. hydrarg. oxidi flavi.............gr. i |06
Lanolini ....ʒi 4|

M. Ft. unguentum. Sig.: A small piece applied locally to the conjunctiva and light massage given to the closed lid. Or:

℞. Ung. hydrarg. ammon...............gr. i |06
Lanolini ....ʒi 4|

M. Ft. unguentum. Sig.: A small amount to be applied locally.

It is often necessary in these cases to change from one remedy to another in order to obtain the best results. In cases of follicular conjunctivitis the general health and hygienic surroundings of the patient should be inquired into and the patient should, in a way, be quarantined, having a separate bed, bed linen, towels, etc. Internally, iron in some form is of value and locally the astringents used in the chronic catarrhal form are of service. The follicle may be destroyed by expression with the thumb nail or dressing forceps.

Psoriasis.

Shoemaker recommends the following *application locally* in the treatment of psoriasis:

℞. Acidi salicylici
Sulphuris *sublim.*, āā..................ʒi 4|
Olei eucalypti ....ʒss 2|
Ung. aquæ rosæ ....℥i 30|

M. Ft. unguentum. Sig.: Rub a small amount in well on the patches.

Internally, he recommends:

℞. Creosoti ....m. ii |12
Pepsini (scale) ....gr. ii |12

M. Ft. capsulæ No. i. Sig.: One capsule three times a day, after meals.

He also recommends chrysarobin in the treatment of psoriasis, combined as follows:

℞. Olei *cadini* ....ʒss 2|
Chrysarobini ....gr. xx 1|30
Ung. zinci oxidi ....℥i 30|

M. Ft. unguentum. Sig.: Apply locally to the affected areas.

Erysipelas.

In order to prevent the infection from spreading, Floeckinger, in *Amer. Therapist*, recommends that the border line be painted with pure tincture of iodin. If the point of origin can be located he cauterizes it with pure carbolic acid. He recommends the tinctura ferri chloridi in doses of from 10 to 20 (.65-1.30) minims in glycerin every two or three hours. He also recommends the use of antistreptococcic serum as an injection in doses of 20 c.c., and he repeats the dose in from six to twelve hours, according to the severity of the infection. He regards this line of treatment as the most effective. Abscess formation demands multiple incision.

The *Med. Press* recommends the following combinations in the treatment of erysipelas:

℞.	Guaiacol		
	Tinct. iodi		
	Spts. etheris, āā	ʒi	4
	Menthol	gr. i	06

M. Sig.: Paint the affected surface three or four times a day.

Internally the following may be used:

℞.	Spts. camphoræ	℥i	30
	Aquæ laurocerosi	ʒss	2
	Syrupi simplicis	ʒi	4
	Misturæ amygdalæ	℥iv	120

M. Sig.: One tablespoonful every two hours, followed by a warm drink.

Medicolegal

Conclusions Based on Narrations of Patient.—The Supreme Court of Illinois says, in Stevens vs. People, that, while it is competent to show exclamations indicating pain as being some evidence of pain itself, and to show where the patient locates the seat of his or her suffering, this court knows of no well considered case where it is held competent for the physician to testify that he reached his conclusion or formed his opinion as to the ailment or physical condition of the patient from the cause or history of the injury, ailment or disease as narrated by the patient.

Railroad Company Not Liable for Negligence at Hospital.—The Court of Appeals of Kentucky says, in Illinois Central Railroad Company vs. Buchanan, that the latter party while in the service of the railroad company had his kneecap broken and was sent to the Illinois Central Hospital for treatment. He subsequently brought this action against the railroad company for damages, claiming that while under the care of the physicians and nurses of the hospital he was unskillfully and improperly treated. It was shown, however, that the Illinois Central Hospital Association, which conducted the hospital, was a separate and distinct corporation from the railroad company, although all officers and employes of the railroad company were made members of the corporation, with certain exceptions, and sums which the members were required to pay were collected by the railroad company to pay the expenses of the hospital, and went into the hands of the treasurer of the hospital association, who was also the treasurer of the railroad company. So the court says that the proposition was presented that, because the railroad company simply acted as the agent in the gathering of the funds from its employes for the hospital purposes, it thereby made a contract to be responsible for the conduct of those in control of the hospital. The conclusion reached by the court is that the railroad company was in no way liable for the conduct of the directors of the hospital corporation, or the physicians or the attendants at the hospital. The court says that if the railroad company was the real party at interest, and was simply using the hospital association for its financial profit, then the court might consider whether or not it was a case where it should look at the substance, and not the shadow, of things, in determining its liability. Doubtless the railroad company was indirectly benefited by its employes having proper and humane treatment at the hospital prepared for them, but that incidental benefit could not raise the question suggested, nor make it liable for the act of servant or agent of an independent corporation.

Status Lymphaticus Death During Chloroform.—The Second Appellate Division of the Supreme Court of New York says that the trial judge told the jury in the malpractice case of Wood vs. Wyeth that in a civil case the evidence to establish negligence must be just as strong as that required to establish guilt in a prosecution for manslaughter. No discussion is necessary to show that such is not the law. It is conclusively settled by authority in the state of New York that in a civil case the plaintiff rests only under the burden of proving his case by a preponderance of evidence, and not beyond a reasonable doubt. The law required that the physician, on undertaking treatment of the patient, should possess that reasonable degree of learning and skill ordinarily belonging to a physician and surgeon in the locality in which he practiced, and imposed on him the duty to use reasonable care and diligence in the exercise of his skill and the application of his learning, and to act according to his best judgment. It was conceded on the trial that there was no question as to the physician's learning or skill, so that the only remaining questions were whether he used reasonable care and diligence in the exercise of his skill and the application of his learning to accomplish the purpose for which he was employed, and whether he acted according to his best judgment. If he did, he was not legally responsible for the death of the boy. According to the physician, he found the patient suffering from blood poisoning, which was in danger of becoming general. His temperature was more than 100 degrees, and he knew positively that blood poisoning was going to get into his system. He thereon resolved to operate on the boy that day, to try to save him from this general blood poisoning. He then questioned the patient as to whether he had had any breakfast, and the boy responded that he had had a piece of meat and some bread. He used chloroform as an anesthetic instead of some other agent because he believed it was safe and better for the child, who presented such a bad appearance that the physician did not intrust anybody else to administer the chloroform, but gave it himself. Unfortunately, the chloroform proved fatal, because of a condition of the patient's system described as "status lymphaticus," not discoverable by any physical examination that could have been made before death. The theory of the plaintiff's counsel, as indicated by a question to the witness, was that the boy had eaten a breakfast consisting of a quarter of a pound of pork, a quarter of a pound of ham, four slices of bread, two eggs, and a cup of coffee, only three hours before the operation; but, if this were the fact, there was no evidence, the court says, that the physician was informed of it. The test here applicable to his conduct was not what the patient had actually done in the way of taking food, but what the patient told the physician on that subject. The case, instead of being one of negligence, appeared to be only another melancholy instance of a death on the operating table in a charity hospital of a patient being treated with a high degree of skill and care by a surgeon of unquestioned learning. Such a death is always painful enough to the conscientious surgeon under whose care it occurs, but it can not subject him to any legal liability, where there is no sufficient proof that he was derelict in the performance of his professional duty toward his patient.

Admissibility of Dying Declarations.—The Supreme Court of Illinois says, in Brom vs. People, that the admission of the dying declaration of the deceased in a homicide case forms an exception or qualification to the well-settled rule that secondary or hearsay evidence is not admissible. The reasons usually given in the books for the admission of such declarations are, first, that the solemnity of the occasion under which they are made dispenses with the necessity of an oath; and, secondly, the impossibility in many cases of producing better proof of the homicide makes it necessary that such declarations be admitted in order that those clearly guilty may not escape punishment. Such declarations are made not under oath. There is no opportunity given to cross-examine the party making the same, and the accused is deprived of the right to meet his accuser before the court and jury face to face, and the courts for those reasons are not disposed to extend the rule to embrace cases which do not clearly fall within all its limitations. The cases in which said declarations are admitted have been confined by the courts to cases where the declarations were made by the injured party under the fixed belief and moral conviction that his death was impending and certain to follow almost immediately. The declarant in this case may have been excited from what the physicians told him, and may have thought, from his condition, that he would not get well, and that he might eventually die from the effects of his wounds. That, however, was not sufficient to make the declaration admissible. He must have entertained at the time he signed the declaration a fixed belief and moral conviction that his death was then impending, and certain to follow almost immediately. The question of his belief that his death was impending and certain to follow almost immediately could not alone be determined from what the physician testified he said on that subject on the occasion of signing the instrument, but his acts were to be considered in connection with his words, as well as the circumstances which surrounded him at the time the declaration was signed, in determining what his belief relative to his immediate death was at that time. Furthermore, while the court does not hold that he could not have ratified a statement prepared the previous evening by the state's attorney, so as to have made it his dying declaration, the evidence that he did ratify it after he was impressed with impending death should be of such a character as to satisfy the mind of such ratification beyond any reasonable doubt.

Operation to Improve Appearance After Injury.—The Supreme Court of Oregon says that in the personal injury case of Busch vs. Robinson, where the plaintiff's hand was caught between the rollers of a mangle, a physician, after describing the extent of the injury, and that there was a webbing of the fingers down to the middle joint, testified that the cosmetic effect of the hand would be improved by an operation dividing the fingers again so that the woman could wear a glove; that, while it would probably not improve the usefulness of the hand, it would much improve its appearance; and that the reasonable charges of a surgeon for performing the operation would be about $100. He further testified, over objection, that it would be better for the plaintiff to go to a hospital during the operation and treatment, and that the expense there would be $2 a day for about thirty days. The objection to this testimony was that the expense attending the further treatment of the hand to improve its appearance was not a proper element of damages for the jury's consideration. But the court says that it would seem that the operation or further treatment and the expense attending it would be but the natural and probable result of the injury—as much so, almost, as it was necessary to employ a surgeon in the first instance to secure proper treatment for saving the hand, if possible. It was, therefore, within the rule for the measure of damages.

Current Medical Literature

AMERICAN.

Titles marked with an asterisk (*) are abstracted below.

American Medicine, Philadelphia.

August 12.

1 *Conditions Determining Variations in the Energy of Tumor Growths. L. Loeb, Philadelphia.
2 *Infection in Transportation. H. M. Bracken, Minneapolis, Minn.
3 *Diseases of the Heart and Their Treatment: A Synopsis. O. Lerch, New Orleans, La.
4 *Study of Enzyme Action and Its Relation to Human Metabolism and the Development of Tuberculosis. H. E. Lewis, Burlington, Vt.
5 *Anastomosis and Transplantation of Blood Vessels. A. Carrel, Chicago.
6 *Mercuric Chlorid, Intravenously or Intramuscularly, for Epidemic Cerebrospinal Meningitis. R. Hogner, Boston.

1. **Conditions Determining Variations in Energy of Tumor Growths.**—Loeb asserts the rate of tumor growth is not only influenced by the species into which the tumor is transplanted, but also by variations which exist among individuals or families of the same species. Under certain conditions a state of active immunity can be experimentally produced. It can be accomplished more easily with some tumors than with others. The energy of tumor growth can be experimentally increased through successive transplantations up to a certain maximum. It is also possible to cause an experimental decrease in the energy of tumor growth. These variations are caused by a direct stimulating or depressing effect on the tumor cells. Contact metastases may occur, and different tumors which are morphologically similar or identical behave differently in this respect. The greatest care ought to be exercised to prevent a tumor from touching the wound during extirpation. The fact that surgeons operating on tumors do not become infected agrees with the facts found in experimental tumor inoculations. Tumor growth is primarily due to an increased energy of growth of those cells from which the tumor takes its origin; it can not be due to a lowered resistance of the organism in which the cells carry on their apparently unlimited growth. If a tumor can not be successfully inoculated into other animals, it is probably not due to the fact that other animals are more resistant toward the growth of inoculated tumor cells than the animal in which the tumor growth developed originally, but to other causes still unknown.

2.—See abstract in The Journal, May 27, 1905, page 1707.

3. **Diseases of Heart and Their Treatment.**—Lerch emphasizes the fact that health and life depend largely on the equilibrium that exists between arterial and venous pressure. As long as compensation is perfect, no matter what the lesion may be, the patient does not suffer any inconvenience. The object, therefore, of all treatment must be to keep such a compensation or to re-establish it when lost. In patients with a completely broken compensation rest and drugs must be used. As soon as the compensation is re-established mechanical and dietetic treatment must take the place of drugs, and if under its employment the heart again begins to fail, the prognosis is grave.

5. **Anastomosis and Transplantation of Blood Vessels.**—Carrel states that when a segment of artery is removed the circulation may be restored in the peripheral portion by interposing between the cut ends a segment of vein. Experiments on dogs were undertaken with the view of finding a new treatment of aneurism. A segment of carotid or femoral artery was resected. The continuity of the vessel was restored by interposing a segment of jugular or femoral vein. After completion of anastomosis, the peripheral arterial circulation was immediately restored. The anastomosis and the venous wall adequately support the arterial blood pressure. The circulation below the venous segment appears normal.

6. **Mercuric Chlorid in Epidemic Cerebrospinal Meningitis.**—Hogner has found intragluteal injections of mercuric chlorid, twice a day, of great value in the treatment of epidemic cerebrospinal meningitis. He uses: Mercuric chlorid, 2 parts; sodium chlorid, 9 parts; distilled water to 1,000. One to 4 c.c. are used for intravenous or intramuscular injection, once or twice a day. The maximum dose intravenously is 4 c.c. of the solution. Hogner prefers the intravenous injections and he cautions against extravenous injections on account of the bad local effects.

Medical Record, New York.

August 12.

7 *New Method of Orchidopexy. C. Beck, New York.
8 **Dynamics of Dreams.* A. E. Gibson, Los Angeles, Cal.
9 *Length of Enteron (Small Intestine). B. Robinson, Chicago.
10 Position of the Bladder in Fibroid of the Uterus. J. A. Schmitt, New York.
11 Dual Genital and Extragenital Chancres—Chancre a Distance. M. L. Heidingsfeld, Cincinnati, Ohio.

7. **New Method of Orchidopexy.**—Beck says that the widespread opinion that a retained testicle will descend *from the* inguinal canal to the scrotum at the age of puberty is erroneous, and that while it may sometimes occur, he has never seen it do so himself. He, therefore, thinks *it* unwise to defer surgical action until puberty, owing to the risk of atrophy, and advises operation after the third year, unless there is some contraindication. His method of operating, which he calls the "necktie operation," is essentially as follows: The incision is like the *Bassini incision*, prolonged downward, and the testicle is lifted from its bed and freed from all adhesions. It is then pulled down into a pocket prepared for it in the scrotum. In order to secure it there, a flap is dissected from the outer margin of the inguinal ring downward, and turned in such a manner that it can be attached to the opposite layer in a semilunar shape. Thus this band surrounds the testicle

like a necktie, the testicle being retained as in a buttonhole. The length of the semilunar flap will be dictated by the greater or lesser extensibility of the cord. The aponeurosis is then united above.

8. **Dynamics of Dreams.**—Gibson presents an exhaustive analysis of the physical and psychical basis of dreams and sums up his views in part as follows: Dream and waking differ in degree and form of manifestation only, not in principle and essence. Like waking consciousness, dream reveals, but does not create. The same world that surrounds the waking individual surrounds the dreamer, only the viewpoints and media of observation are changed. As the life experience of an individual in his waking consciousness receives its character and value by and through his power of response to environment, so in a similar way the value of a dream depends on the power of the ego to respond to consciousness in its various forms of emotions, ideas and feelings which constitute the environments of the subjective or dream plane. Waking or dreaming, the individual is, or becomes, what he chooses to be at any given moment of his existence. The background for ordinary dreams consists of undigested remnants of waking life. Hence, ordinary dreams are merely undigested life, being made up by longings, desires, anticipations, idle hopes and miscarried realizations, which, occupying the mind during the day, are overtaken by sleep before having reached their fruition. Hence the mixture, in most dreams, of the sane and the insane, of truth and delusion. On the other hand, the life lived out and assimilated in a purposeful existence becomes absorbed in the formation of character and leaves no residue to form the bizarre staging for the confused dream. And to such an individual the intuitions of dream life, with their dazzling imagery, will introduce symbols, which, properly interpreted, may carry the significance of prevision or prophecy. Therefore, to turn dreams into useful, intelligent and intelligible factors, we must fill our waking life with deeds and thoughts of universal usefulness, and freight the train of events with an unflinching devotion to duty and virtue.

9. **Length of Enteron.**—Robinson reports the results of measurements made at autopsies on 450 males and 150 females. The average length of the enteron in the males was 23 feet, and in the females was 19 feet. The length of the enteron may be very much modified by local or general disease, especially during childhood, and also by the character of the food consumed. The enteron increases in length most rapidly a few months subsequent to birth, when it may grow one and one-half feet a month, and it assumes its chief length in early childhood. A subject with a maximum length of enteron possesses a stronger constitution than a subject with minimum length, as he can digest and economize more food. The human enteron presents colossal differences as to length (males 11½ feet minimum, 32 feet maximum = 20 feet, and female, 10½ feet minimum, 30 feet maximum = 19½ feet). This variation of 20 feet is almost equal to the length of an average enteron. The enteron varies over double to two and one-half times its length. In adults the relation of the length of the enteron to the body length is as 7.2 to 1. There is a vast difference between the absolute and relative length of the enteron in man. The enteron measured *in situ* is 3 to 6 feet less in length than when extirpated. Different diseases of the enteron may result in elongation or contraction.

Medical News, New York.

August 12.

12 *An Analytical and Clinical Study of Thirty Cases of Ectopic Pregnancy. S. M. Brickner. New York.
13 *Treatment of Chronic Nasal Catarrhs with Sulphur. L. Kolipinski, Washington, D. C.
14 Treatment of the Individual Case in Appendicitis. C. C. Allison, Omaha, Neb.
15 Disease of the Pancreas. O. M. Logenecker, Rosedale, Kan.
16 Malarial [illegible] Fla.
17 The Docto [illegible] Ga.
18 Case of C [illegible] with Hydrom [illegible] ago.

12. **Analytical Study of Ectopic Pregnancy.**—A clinical study of 30 cases leads Brickner to draw the following conclusions: Sterility does not necessarily precede the development of ectopic pregnancy. If it does exist, its cause is often the same as the cause of abnormal pregnancy. The main characteristic of the bleeding in ectopic gestation is its great irregularity, there being no type. As a general rule it is not profuse. It may be constant or intermittent, and its character or profuseness has no relation to the type of the lesion. A chilly feeling often accompanies the bleeding, and vomiting and nausea often accompany the first flow. The uterine flow has apparently no connection with the death of the fetus. The pain in tubal pregnancy is usually localized over the side of the lesion. It has no definite character; it may be cramplike over the affected tube; it may simulate labor pains; it may be sharp and sudden, or it may be of a bearing-down nature. The pain during a tubal abortion and that concomitant with the presence of a hematosalpinx is usually cramplike. The usual symptoms of pregnancy may be present. They are frequently absent, but their absence does not militate against the possibility or probability of an ectopic pregnancy. Tenderness on palpation of the mass adjacent to the uterus is of great diagnostic value when taken in connection with the history and the other pelvic findings. A rise of temperature between 99 and 100 F., in the absence of signs of infection, is worthy of consideration in the diagnosis. The causative factors of tubal pregnancy are probably numerous. Not one element, but many, may bring about the condition in different instances. It is likely that atavistic tendencies, congenital or acquired anomalies, pelvic inflammations, ovarian and tubal disease, all play a rôle in individual cases; but none of these factors alone is sufficient to explain all cases. There are as yet no definite data by which we can differentiate diagnostically between all the varieties of ectopic gestation. Occasionally this may be done, but it is impossible always to distinguish between an unruptured tube and a tubal mole. A hematocele and a freshly ruptured tube can almost always be differentiated from the other usual lesions.

13. **Treatment of Chronic Nasal Catarrh.**—In treating the several forms of chronic nasal catarrh it is Kolipinski's custom to have the patients seated with head erect and the mouth open. The anterior nasal cavity is exposed with a speculum, the tip of the nose elevated and the sulphur freely and thoroughly blown in with a strong powder blower. This has been properly done when the powder appears from mouth and opposite nostril and an irritative cough results. The treatment is repeated on the other side. The posterior nasal space and naso pharynx may also be treated directly by way of the floor of the nose or fauces. These procedures are not entrusted to the patient unless he is unusually attentive to his own case. They are made two or three times a week for a month, and once a week for the next two months. The local sensations of sulphur are not unpleasant. Occasionally in women it sets up a conjunctival hyperemia when used too profusely or when accidentally blown on the face, and some women complain of nasal irritation and pain; then it is best to use the treatment but once a week. The cases must be selected carefully, those in which there is no other primary nasal disease, deflection, deformity or growth must be treated surgically. This method of treatment has proved of value in simple, chronic, hypertrophic, atrophic and phlegmonous *rhinitis; and in simple chronic and hyperplastic nasopharyngitis.*

New York Medical Journal.

August 12.

19 Fatal Case of Bacillus Pyocyaneous Septicemia After Surgical Operation. J. B. Roberts, Philadelphia.
20 Adenoids. E. M. Sill, New York.
21 *Significance of Sudden, Severe, Abdominal Pain. E. A. Babler, St. Louis.
22 Tropical Disease of the Angola Highlands. F. C. Wellman, Benguella, West Africa.
23 Reflections at the Majority of a Parchment. W. B. Konkle. Montoursville, Pa.
24 *Unusual Sequel to Kraske's Operation. C. B. Kelsey, New York.
25 Six Lectures on the Diseases of the Blood. J. M. Swan, Philadelphia.

21. **Abdominal Pain.**—Babler urges that every effort be made to ascertain the true cause of any sudden, severe, persistent pain in the abdomen, and cautions against the use of morphin for the purpose of allaying the pain. A complete history of the patient must be secured and a careful examination made. Ascertaining the site of the initial pain is of more diagnostic value than the location of the diffuse pain. Such pain is of grave import and demands immediate investigation.

24. **Unusual Sequel to Kraske's Operation.**—Two years after the operation Kelsey's patient noticed a tumor over the sacrum which gradually increased in size. On examination this tumor proved to be a hernia escaping behind the rectum through the opening into the pelvis made by the old incision.

Boston Medical and Surgical Journal.

August 10.

26 Notes on X-Light. W. Rollins, Boston.
27 Three Cases tical Importance of Recognizing the M. Prince, Boston.
28 Remarks on th Surgical Treatment of Hepatic Cirrhc Boston.
29 *Peroneal Resection as a Means of Correction in Rigid Valgus. C. F. Painter, Boston.

29. **Peroneal Resection in Rigid Valgus.**—Painter reviews the clinical history of valgus, which he divides into three classes of operative cases, and describes the treatment in vogue.

St. Louis Medical Review.

August 12.

30 *Scopolamin-Morphin as an Adjuvant in the Administration of General Anesthesia. M. G. Seelig, St. Louis.

30. **Scopolamin-Morphin as Adjuvant to General Anesthesia.**—The purpose of Seelig's paper is to present a series of 65 general anesthesia administrations, showing that the method used is one that merits recommendation and trial. This series included the following range of cases: Abdominal hysterectomy, 8; vaginal hysterectomy, 6; hernia, 5; plastic operations, 8; operations on the tubes and ovaries, 11; uterine fixations, 6; curettements, 6; hemorrhoids, 3; fistula in ano, 2; thyroidectomy, craniectomy, orchidectomy, appendicectomy, costectomy, nephropexy, tumor of breast, cyst of neck, pelvic abscess, exploratory laparotomy, one each. In every instance the patient received a hypodermic injection of scopolamin hydrobromid, grain 1/100, and morphin, grain 1/6, one half-hour before the administration of the general anesthetic. The general anesthesia was induced by means of the ethyl chlorid-ether sequence administered through the Bennett inhaler. Of these 65 patients only one vomited or retched while on the operating table. Seventy-seven per cent. of the patients did not vomit at all. One-third of the patients that did vomit, vomited only once, and then only from two drams to one ounce of clear mucus. Nausea was never pronounced except in two cases, and vomiting never occurred earlier than two hours after the operation. The advantages of this method are: Lessened amount of anesthetic necessary, absence of salivation, avoidance of the stage of excitement, marked reduction in the liability to vomit, and quiet and freedom from pain after operation.

Lancet-Clinic, Cincinnati.

August 12.

31 Intestinal Obstruction. F. F. Lawrence, Columbus.
32 Prophylaxis and Treatment of Gonorrheal Salpingitis Often Ending in Pyosalpinx. E. Ricketts, Cincinnati.
33 Abortions. J. A. Hall, Cincinnati.

California State Journal of Medicine, San Francisco.

July.

34 A Medicolegal Case. J. L. Asay, Santa Clara.
35 Is the Health of Los Angeles Menaced by Pulmonary Tuberculosis? G. H. Kress Los Angeles.
36 Adams-Stokes Syndrome. H. S. Gordon, Santa Ana.
37 *Use of Hyoscin Hydrobromate in Treatment of Morphin Habit. R. E. Bering, Tulare.
38 Uncinariasis in bservation of Sixty-Two Cases.
39 Adolescence in n Diego.
40 Practical Meth of the Defects of the Special L. C. Deane, San Francisco.
41 Conveyance of Syphilitic Infection by Medical Men. D. W. Montgomery, San Francisco.
42 Case of Human Glanders. W. F. Cheney, San Francisco.
43 Typhoid Infection of the Hip Joint. S. J. Hunkin, San Francisco.
44 Remote Effects of Typhoid on the Bones and Joints. P. C. H. Pahl, Los Angeles.

37. **Hyoscin Hydrobromate for Morphin Habit.**—Bering advises placing the morphin habitué in a sanitarium where he can be under constant supervision and at the same time is removed from the sympathetic influence of friends. The room should be darkened and should contain as little furniture as possible. The patient must not be left alone a moment during the administration of the hyoscin, nor for the first twenty-four hours after the last dose of hyoscin has been given. The night before beginning treatment a vapor bath is given to secure free action of the skin. Bering also endeavors to secure free elimination of all toxic material from the system, using for this purpose strychnin sulphate in doses ranging from 1/32 to 1/8 grain every two hours, for three or four doses, with calomel, podophyllum, ipecac, etc. Hyoscin is then given in doses ranging from 1/100 grain every hour to 1/400 grain every four hours, until the full physiologic action is secured. From that time on just enough hyoscin should be given to continue this action for a period ranging from thirty to forty hours, when the hyoscin is discontinued, if the patient is free from pain and desire for the drug. If not, the hyoscin is resumed for another twelve or twenty-four hours. If the patient goes to sleep during the administration of the hyoscin no more is given until he awakens. Should the patient at any time show signs of pain, more hyoscin must be given. The action of hyoscin is not the same in any two patients. While it is perfectly safe if used carefully, it is a powerful agent for harm when not so used. Each patient must be closely watched. If a cardiac stimulant is required, Bering gives spartein sulphate in 1/8 to 1/4 grain doses, repeating the dose every four to six hours, as indicated.

Illinois Medical Journal, Springfield.

July.

45 Report of Cases. S. C. Plummer, Chicago.
46 *Indications for Opening the Mastoid Process in Cases of Acute Empyema of the Cells When There Is an Absence of Signs Over the External Surface of the Mastoid. G. E. Shambaugh, Chicago.
48 *Errors in the Diagnosis of Abdominal Troubles. C. U. Collins, Peoria.
49 *Surgical Tuberculosis. W. E. Guthrie, Bloomington.
50 *Tubercular Nephritis—Review of Literature. R. J. Christie, Jr., Quincy.
51 *Prophylaxis of Syphilis. A. Schalek, Chicago.
52 Pathologic Anatomy of Lacerations of the Obstetrical Canal Resulting from Obstetrical Injuries. J. C. Webster, Chicago.
53 Poisoning from Oil of Wintergreen. F. C. Vandervoort,
54 * of Medicine in Illinois. G.
55 * Childhood with Collection J. H. Hess, Chicago.
56 * of Perineal Prostatectomy.

46.—See abstract in The Journal, June 3, 1905, page 1802.

48.—Id., June 3, 1905, page 1801.

49.—Id., June 3, 1905, page 1801.

50.—Id., June 3, 1905, page 1801.

54.—Id., May 27, 1905, page 1705.

55.—Id., June 3, 1905, page 1802.

56.—**Important Points in the Technic of Perineal Prostatectomy.**—The points mentioned by Ochsner are a free exposure of the gland, prevention of hemorrhage, sufficient retraction of the gland to enable keeping it under control during its removal, reduction of traumatism to a minimum, maintaining the continuity of the urethra, establishing good drainage and limiting the time of the operation in order to reduce the amount of shock and to lessen the harmful effects of the anesthetic on the kidneys.

Therapeutic Gazette, Detroit, Mich.

July 15.

57 *Two Additional Cases of Thoracic Aneurism and One of Innominate Aneurism Treated by Wiring and Electrolysis. H. A. Hare.
58 Guaiacol in Treatment of Pneumonia. W. G. Cain, Epping, N. H.
59 Clinical Study of the Relative Actions of Atropin and Homatropin as Cycloplegics. O. Wilkinson, Washington.
60 Points in Palliative Gynecology. W. Krusen, Philadelphia.
61 Cysts of the Pancreas. R. P. McReynolds, Philadelphia.
62 General Practitioner as a Temporary Ophthalmologist. C. P. Franklin, Philadelphia.

57. ***Aneurism* Treated by Wiring and Electrolysis.**—The first case reported by Hare is that of a woman of 50 suffering from an aneurism involving the superior and posterior portions of the transverse arch of the aorta, including the origin of the large vessels. Gold wire to the amount of eight feet was passed into the sac through an ordinary insulated needle, and the electric current started at 5 milliamperes and gradually increased to 50 milliamperes, was passed through the sac for thirty minutes. Before the operation was completed the patient was relieved of pressure symptoms to some extent, and for several weeks afterward was able to sleep in a reclining posture with perfect comfort. Six months after the operation the growth which had been formed by the operation at the

margin of the clot began to enlarge and death finally occurred, the result of pressure on the trachea combined with exhaustion. At the autopsy the wire was found imbedded in a clot. The second case reported was that of a man who presented a mass which filled the epiclavicular space at the right side near the sternum and passed backward under the sternomastoid muscle. Two feet of gold wire were introduced into the tumor, which proved to be an aneurism, and electrolysis was used, as in the first case, for forty minutes. Two weeks after the operation the area into which the wire had been introduced was firm and devoid of expansile pulsation. Death took place two months later, the result of exhaustion and interference with respiration and deglutition. The aneurism took its origin from the inferior portion of the wall of the innominate artery. The sac was lined with a laminated clot, the interior of which was occupied by a black, rather thick liquid. No trace of the wire could be found in any part of the clot. In the third case, one of aneurism of the thoracic aorta just below its descending portion, nine feet of wire were introduced and the electric current was passed for about three-quarters of an hour. The patient lived four months, dying at the end of that time from pressure and exhaustion. The autopsy revealed an enormous laminated clot filling the entire sac, with the wire coiled in the center of the aneurism, embedded in fibrin, through which the blood had formed a channel. Hare says that it is noteworthy that practically in all these cases the operation was followed by immediate relief of the pressure symptoms, and a diminution in the expansile pulsation of the part operated on. The degree of relief varied very considerably, but all the patients experienced some benefit. Several of them volunteered the information that they felt amply repaid for the operation by the relief which they obtained. In each instance the ultimate death of the patient in no way proved that the operation was at fault. It indicated only that the disease in the blood vessel wall was so extensive that the point of greatest weakness having been reinforced, the vessel then gave way at the margin of the clot, and at a place where operative interference could not well be undertaken. In each instance the operation probably prolonged life. The operation is performed under desperate circumstances, and the fact that it does not produce a permanent cure in every case in no way militates against its employment.

Cleveland Medical Journal.

July.

63 *New Operation for Hernia of the Pelvic Floor (Procedentia.) G. W. Crile, Cleveland.
64 Secondary Effects of Hypertrophy of the Third Tonsil. J. M. Ingersoll, Cleveland.
65 Pyrexia from Mechanical Intestinal Irritation in a Child. G. S. Smith, Cleveland.
66 Rash of Adults Simulating Exanthemata Due to Disturbance of the Digestive Tract. N. Rosewater, Cleveland.

63. **New Operation for Hernia of Pelvic Floor.**—After two complete attempts to correct a complete hernia of the pelvic floor, Crile finally succeeded by performing an operation which he describes as follows: With the patient in the Trendelenburg posture, a median incision of good length was made; approximately one-fourth of the entire abdominal contents were withdrawn from the hernial sac, the pelvic floor steadied and the hernia reduced. The bladder was found well down in this cavity and totally prolapsed. An anteroposterior incision was made across the middle of the floor of the pelvis, dividing the vagina into two lateral halves. The vaginal mucous membrane of the part to be brought through the abdominal incision was removed. The bladder was separated from the vagina for some distance downward. It was then found that the vagina and the floor of the pelvis had been so stretched that they could easily be brought out through the abdominal wound beyond the surface of the skin. After making an incision through the abdominal fascia 4 cm. from the median line on each side, the fibers of the recti were separated and the peritoneum perforated. Each half of the split vagina with the attached uterosacral and uteropelvic ligaments and all the other structures of the floor of the pelvis, together with the round and broad ligaments, were drawn out through these openings on each side of the median incision. While the parts are well up in place so that the top of the incised vagina presented closely against the under surface of the peritoneum, the latter was sutured in this position with plain catgut. The original peritoneal incision, the muscle and the external fascia were then closed, the latter by continuous sutures of chromicized gut, after which the freed ends of the vagina and pelvic floor, which had been drawn up through the lateral openings in the peritoneum, recti and fascia, were united in the middle line by means of chromicized gut. The skin was then closed. The patient made a good recovery from the operation and was discharged in three and one-half weeks. For some time after the operation the patient felt a sensation of dragging on the wound and experienced some pain. This passed away after several months. She has been doing her usual work, and at the present time, more than three years after the operation, there has been no recurrence of the hernia. Crile says the indication for this operation exists only in the cases of complete hernia (procidentia). In the minor degrees of prolapse it would be quite impossible to carry out this technic for want of sufficient length of ligaments and of vagina to reach to the external fascia.

Journal of Cutaneous Diseases, New York.

July.

67 *Varicella Accompanying Herpes Zoster. W. T. Corlett, Cleveland.
68 Case of Acute Malignant Pemphigus (P. Vegetans), with Autopsy Report. O. S. Ormsby, and P. Bassoe, Chicago.
69 Clinical and Microscopic Reports of Dermatologic Cases. L. E. Schmidt, Chicago.

67. **Varicella Accompanying Herpes Zoster.**—Corlett reports 4 cases. The first patient was a woman, aged about 48, who came to see him because of herpes zoster involving the lateral surface of the neck, thence passing over the shoulder and down the arm and the trunk in the vicinity of the left mamma. On the back, chest and extremities were lesions resembling those of varicella. The only conclusion obtainable was that the patient had an attack of herpes zoster occurring simultaneously with varicella. The second patient was a man, aged 44, who had a herpes zoster frontalis with a typical varicella eruption on the chest, arms, legs and back. The third case, a man aged 40, corresponded to the first two. The fourth case, a man, aged 70, had herpes zoster in the area supplied by the second lumbar nerve and a varicella eruption on the trunk and forehead.

Washington Medical Annals.

July.

70 Treatment of Ulcers of the Cornea. S. B. Muncaster, Washington, D. C.
71 *Case of Typhoid with Complications. L. F. Friedrich, Washington.
72 Case of Fibro-Lipoma. J. F. Thompson, Washington.
73 Sporadic Cretinism. I [illegible]
74 Gastroenterostomy for [illegible] tomach and Duodenum. I. [illegible]
75 Case of Porencephalus [illegible]
76 Rational Versus Empir [illegible] Washington.
77 Two Cases of Goiter with Operations. G. T. Vaughan and A. A. Snyder, Washington.
78 Unusually Large Aortic Aneurism. W. H. Hough, Washington.
79 Uses and Abuses of Pelvic Massage. J. T. Johnson, Washington.
80 Case of Renal Calculi; Operation. J. F. Mitchell, Washington.

71. **Typhoid with Complications.**—The case reported by Friedrich is interesting because of the many and serious complications which developed. The fever was unusually irregular, the temperature often being 103 and 104 for two days, then dropping to normal, again rising, and again falling to normal and even subnormal, continuing thus an erratic course for three weeks, and then, without apparent cause, rapidly rising again. Vomiting was very persistent, the ejected matter containing mucus and bile. The abdominal symptoms were greatly exaggerated. The eruption was very extensive, petechiæ of immense size and varying in color from bright red to dark brown, and extending from the abdomen over the chest and back. A severe diarrhea, alternating with dysentery, developed, and there were many profuse hemorrhages. Jaundice was marked. About the thirtieth day of the disease an acute lobar pneumonia developed. Nephritis, accompanied by cystitis, was one of the most persistent complications. Symptoms of uremia supervened, and marked general convulsions were noted. Suppression of urine, alternating with re-

tention, became most aggravating. The nervous symptoms were severe. Besides convulsions there were delirium and coma, subsultus tendinum, carphology, a marked ataxic condition, and tenderness and hyperesthesia along the spine. There was also extreme deafness. The gastric complications were so severe that no food could be taken by mouth. Herpes labialis was very marked and a facial erysipelas became most annoying. Perforation of the bowel occurred at the end of the third month, and a few days afterward the patient collapsed and died.

Medicine, Detroit, Mich.

July.

81 Nasal Headache. L. S. Somers, Philadelphia.
82 [illegible]ber, Philadelphia.
83 [illegible] William C. Drein, Philadelphia.
84 * [illegible], with Description of a New Cellu- [illegible] F. Eikenbary, Chicago.
85 [illegible] elation to the General Practitioner. W. H. Peck, Chicago.
86 Mastoiditis in Typhoid Patients. P. J. H. Farrell, Chicago.
87 Death fr[illegible] a Duodenal Ulcer Two Weeks After [illegible] G. McConnell, Philadelphia.
88 Case of [illegible] with Plates, Showing the Ova of the [illegible] lers and A. Callahan, Philadelphia.

84. **New Head Support in High Pott's Disease.**—The brace dtscribed by Eikenbarry is made of celluloid and stockinet, and is so constructed that it accurately fits the body, the neck and the posterior and lateral aspects of the head. By means of the webbing band passing around the forehead the head and neck are immobilized. There are no adjustments to make, nothing to get out of shape and destroy the fit and thus the effectiveness. The brace has also the advantage of being very light, the ordinary jacket weighing not more than a pound. If used for a dorsal or lumbar Pott's, where no headpiece is needed, the weight would not exceed ten or twelve ounces. The jacket is considerably less than a quarter of an inch thick, and is so strong that it easily bears a weight of 150 pounds. An accurately fitting plaster jacket is applied, including the neck and head. This is removed in the usual way by cutting down the front. From this mold a plaster model is cast. The plaster model is shellaced so as to prevent crumbling of the plaster. Over the model successive layers of the stockinet are drawn, each layer in turn being given a rather thick coat of the celluloid solution. Nine or ten layers are quite sufficient. None of the solution should penetrate to the inner side of the inner layer, or to the outer side of the outer layer, so as to have a perfectly smooth jacket inside and out. After applying the last layer, allow the model to set for twenty-four hours, and then trim the jacket before removing from the cast. Cut down the front in the usual way, bind the edges with chamois or cloth, and place a double row of hooks in front. The celluloid solution is made by dissolving chips of celluloid in acetone, about twenty-four hours being required for solution. The solution should have the consistency of cream.

Northwestern Lancet, Minneapolis.

July 15.

89 *Complicated Heart Case and Its Management. S. P. Rees, Minneapolis.
90 Is Physiologic Cupping of the Optic Disc, not Confined to the Center, Evidence of a Morbid Process? E. J. Brown, Minneapolis.
92 Case of Addison's Disease. G. D. Head, Minneapolis.

89. **Complicated Heart Case.**—Rees' patient gave a history of rheumatism which was followed by the development of aortic stenosis and regurgitation, a relative mitral insufficiency and sacular aneurism of the arch and descending portion of the aorta. The arch was very much hypertrophied, the apex being located in the sixth interspace in the midaxillary line. The pulsation in the vessels of the neck was prominent and jerky. A pronounced, continuous thrill was felt extending from the first to the fifth rib on the left of the sternum, and also along the right upper portion of the sternum in the suprasternal notch and in the vessels of the neck. The general health of the patient was good.

Detroit Medical Journal.

July.

93 Medical Supervision of Schools and the Progress of School Hygiene. C. G. Jennings, Detroit.
94 Use of Sterile Water as a Local Anesthetic. L. J. Hirschman, Detroit.
95 *Personal Experience in the Employment of Mechanical Vibration in the Treatment of Rectal Diseases. W. L. Dickinson, Saginaw, Mich.

95.—See abstract in The Journal, July 8, 1905, page 129.

Southern Medicine and Surgery, Chattanooga, Tenn.

July.

96 *Radical Treatment of Certain Rectal Diseases Under Local Anesthesia. A. B. Cooke, Nashville, Tenn.
97 Case of Anemia of Pernicious Type Showing Marked and Rapid Improvement After the Administration of Liquor Potassi Arsenitis. P. A. Sheaff, Philadelphia.
98 Treatment of Neurasthenia. J. A. Hodges, Richmond, Va.
99 Static Electrical Treatment of Neurasthenia. R. W. Miller, Barton Heights, Va.

96.—Id., July 8, 1905, page 129.

Memphis Medical Monthly.

July.

100 Advanced Methods of Infant Feeding. B. C. McMahon, New York.
101 Formalin in the Treatment of Disease of the Rectum, Sigmoid and Colon. J. L. Jelks, Memphis.
102 Quinin in Pernicious Malaria. A. E. Cox, Helena, Ark.
103 Cerebral Forms of Pernicious Malaria. H. L. Sutherland, Rosedale, Miss.
104 Dystocia. D. M. Hall, Memphis.
105 Appendicitis; Necessity for Early Operation. O. L. Williamson, Marianna, Ark.
106 Treatment of Pulmonary Tuberculosis. G. R. Livermore, Memphis.
107 Connell Suture in End-to-End Anastomosis. B. Malone, Memphis.

Pacific Medical Journal, San Francisco.

July.

108 Medicolegal Consideration of Perverts and Inverts. R. W. Shufeldt, San Francisco.
109 Home Modification of Cow's Milk. C. A. Dukes, San Francisco, Cal.

Columbus Medical Journal.

July.

110 Diagnosis and Treatment of Diseases of the Heart. S. Loving, Columbus.
111 Address, Commencement Exercises of the Ohio Medical University. J. W. Wright, Columbus.
112 Cure of Consumption by Feeding the Patient with Subcutaneous Injections of Oil and Its Digestion by the White Globules of the Blood. T. B. Keyes, Chicago.

Mobile Medical and Surgical Journal.

June.

113 Gastroenterostomy. C. Wilson, Birmingham.
114 Puerperal Infection. E. M. Prince, Piper.
115 Puerperal Sepsis. W. W. Harper, Selma.
116 Responsibilities of a Physician in Obstetric Work and How He Should Meet Them. J. G. Palmer, Opelika.
117 Septicemia, Acute Septicopyemia and Recovery. G. H. Fonde, Mobile.

Vermont Medical Monthly, Burlington, Vt.

June 25.

118 Scarlatina vs. Rubella, etc. E. G. Roberts, Fair Haven.
119 Insomnia, with Special Reference to this Condition in Nervous and Mental Diseases. C. G. Andrews, Waterbury.
120 Treatment of Diphtheria. J. W. Estabrook, Brandon.
121 Importance of Vital Statistics. J. W. Jackson, Barre.

Kentucky Medical Journal, Louisville, Ky.

July.

122 Extradural Hemorrhage. G. A. Hendon, Louisville.
123 Utility of Medicine. P. C. Sutphin, Canmer.
124 Tuberculosis—Medical. W. C. Ussery, Paris.
125 Past, Present, and a Glimpse of the Future of Medical Men and Societies of Fleming County. C. R. Garr, Flemingsburg.
126 Chronic Urethritis. J. W. Kincaid, Catlettsburg.
127 Progress of Diseases of the Eye, Ear, Nose and Throat. A. O. Pfingst, Louisville.
128 Progress in Diseases of Nervous System. B. F. Zimmerman, Louisville.

Fort Wayne Medical Journal-Magazine.

July.

129 Electricity in the Diagnosis of Nervous Diseases. G. W. McCaskey, Ft. Wayne.
130 Medical Expert. W. P. Breen, Ft. Wayne.
131 Parovarian Cyst: Sinistro-spiral Twist of Pedicle with Strangulation: Operation: Recovery. D. Van Sweringen, Ft. Wayne.

Medical Recorder, Shreveport, La.

July.

132 Pericardial Effusions. F. A. Jones, Memphis, Tenn.
133 Substitution of Mild for Stronger Alcoholic Beverages the True Remedy for Intemperance. C. H. Wilkinson, Galveston, Texas.
134 First Aids to the Injured. F. L. Barnes, Trinity, Texas.
135 Ankyloblepharon. Wm. L. Bullard, Columbus, Ga.
136 Bronchopneumonia. T. S. Ragland, Gilmer, Texas.

Journal of Experimental Medicine, New York.

July.

137 Bacteriology of Pertussis, with Special Reference to the Agglutination of the Patient's Blood. M. Wollstein, New York.
138 Presence of Certain Bodies in the Skin and Blister Fluid from Scarlet Fever and Measles. C. W. Field, New York.

139 Possibility of an Antibody for the Tetanophile Receptor of Erythrocytes: A Receptor Study. H. T. Ricketts, Chicago.
140 Comparative Study of Dysentery and Dysentery-like Organisms. J. C. Torrey, New York.

American Practitioner and News, Louisville, Ky.

July.

141 Treatment of Extrauterine Pregnancy (full-grown fetus removed). W. H. Wathen, Louisville.
142 Prostate Gland, with Special Consideration of the Treatment of Postoperative Incontinence. D. S. Wilson, Louisville.
143 Traumatic Neurasthenia. C. Weidner, Louisville.
144 Narcolepsy. S. J. Meyers, Louisville.
145 Calcium Oxalate Calculus—Mulberry Calculus. B. Robinson, Chicago.

Southern California Practitioner, Los Angeles, Cal.

July.

146 Origins of Medicine. W. Hutchinson, Portland, Ore.
147 True Nurse. J. R. Haynes, Los Angeles.
148 History of Medicine. J. P. Widney, Los Angeles.
149 Retrospect, Respect, and Prospect. L. J. Huff, Los Angeles.

Louisville Monthly Journal of Medicine and Surgery.

July.

150 Diagnosis and Treatment of Gastric Ulcer. C. G. Lucas, Louisville.
151 Purpura. J. E. Hays, Louisville.
152 Mesenteric Occlusion.G. A. Hendon, Louisville.

Canadian Practitioner and Review, Toronto.

July.

153 Medical Treatment of Exophthalmic Goiter. R. D. Rudolf. Toronto.
154 Surgical Treatment of Exophthalmic Goiter. C. B. Shuttleworth, Toronto.
155 Duty of the Profession and State as Regards the Mental and Physical Care of Improperly Cared for Children. C. J. Hastings, Toronto.
156 Wards in General Hospitals for Acute Nervous and Mental Diseases. C. Meyers, Toronto.
157 Surgery of the Stomach from the Standpoint of the Clinician A. J. Ochsner, Chicago.

Oklahoma News-Journal.

July.

158 President's Address. Oklahoma Medical Society. E. N. Wright, Olney, Ind. Ter.
159 Radical Cure for Hernia. A. L. Blesh, Guthrie, Okla.
160 Insanity. W. W. Rucks, Guthrie, Okla.
161 Cocain in Minor Surgery. J. H. White, Muskogee, Ind. Ter.
162 Treatment of Rheumatism. W. F. Waugh, Chicago.
163 Measles and Some of Its Complications. M. A. Jones, Walters, O. T.
164 Backward Dislocation of Radius and Ulna of Long Standing. Treated by Resection, with Fairly Good Joint. W. M. Turner, Lawton, Okla.

Indiana Medical Journal, Indianapolis, Ind.

July.

166 Progressive Medicine. G. T. McCoy, Columbus, Ind.
167 Ophthalmology in Zurich and Munich. F. A. Morrison, Indianapolis.
168 Institutional Practice. H. Sharp, Jeffersonville, Ind.

Colorado Medicine, Denver.

July.

169 Koch's Tuberculin. Wm. J. Baird, Boulder.
170 Addison's Disease Without Pigmentation. J. N. Hall, Denver.

FOREIGN.

Titles marked with an asterisk (*) are abstracted below. Clinical lectures, single case reports and trials of new drugs and artificial foods are omitted unless of exceptional general interest.

British Medical Journal.

1 Medical Education—Past, Present and Future: President's Address, British Medical Association. G. C. Franklin.
2 Medicine, Present and Prospective: Address in Medicine; British Medical Association. H. Maudsley.
3 Ascending Currents in Mucous Canals and Gland Ducts, and Their Influence on Infection; Address in Surgery, British Medical Association. C. J. Bond.

The Lancet, London.

July 29.

4 Medical Education—Past, Present and Future: President's Address, British Medical Association. G. C. Franklin.
5 Medicine, Present and Prospective; Address in Medicine, British Medical Association. H. Maudsley.
6 Ascending Currents in Mucous Canals and Gland Ducts, and Their Influence on Infection; Address in Surgery, British Medical Association. C. J. Bond.
7 *Temporary Fixation of Testis to Thigh. C. B. Keetley.
8 Treatment of Acute Summer Diarrhea in Infants. J. A. Coutts.
9 Analysis of 300 Consecutive Gynecologic Laparotomies. A. H. N. Lewers.
10 *Tuberculous Disease of the Cecum. R. A. Stoney.
11 *Rapid Estimation of the Amount of Sugar in Urine. R. T. Williamson.
12 Pulmonary Embolus, Occurring Shortly After Normal Labor. R. J. Waugh.

7. Fixation of Testes to Thigh.—Keetley reports on a series of twenty-five patients operated on for undescended testes, the plan of keeping down the testicle after operation being fixation to the thigh, a method devised by the author in 1894. The main incision is made over the inguinal canal and the external ring. Two other skin incisions are made in most cases, one about one and a quarter inches long at the bottom of the scrotum, and another of the same size in the upper and inner part of the thigh adjacent to the scrotal incision. Before cutting the scrotal incision a bed should be made with the finger in the scrotum to receive the testicle and the scrotal incision should divide all the structures down to this bed. Something, either a blunt instrument or a piece of gauze, should be passed through this scrotal aperture immediately, or its different layers will cease to be opposite one another. The thigh incision should expose the fascia lata. The testicles and the cord having been thoroughly freed from everything but the musculo-fibrous bands forming the gubernaculum, which are generally attached to the pillars of the external ring, especially the internal pillar, the gubernaculum is divided as far away as possible from the testicle. A pair of forceps is then passed from below upwards through the hole in the scrotum and the gubernaculum is seized by it and pulled right through the scrotum till it can be seen through the hole in the skin of the scrotum. At the same time the tunica vaginalis should also be pulled down into the scrotum, though it is not absolutely necessary to keep the testicle in its serous bag. The posterior borders of the apertures in the skin of the scrotum and thigh are next united by a continuous silkworm-gut suture left long at both ends. Now the gubernaculum testis is sutured with strong catgut to the fascia lata of the thigh; and, lastly, the original silkworm-gut suture is used to complete the union of the skin apertures in the scrotum and thigh to one another. The patient is sent to bed with his hip flexed, but soon straightens it out himself, thus gradually lengthening a short cord. For a dressing Keetley uses iodoform gauze wrung out in 1 in 2,000 bichlorid solution, the gauze being passed behind the scrotum as well as in front, and over the gauze, salicylate wool. The testicle is left attached to the thigh for five months. The operation is free from complications. The testicle remains permanently near the root of the scrotum.

10. Tuberculous Disease of Cecum.—Stoney's patient complained chiefly of pain in the left hip, most marked at night, which traveled down the back of the leg to the ankle. She also had some pains in the stomach, palpitation of the heart, giddiness, headache, and general weakness. Examination showed the hip to be normal, but there was much pain and tenderness on pressure over the spines of the first and second lumbar vertebræ. A large, somewhat irregular tumor was felt in the right iliac fossa. The abdomen was opened, and the cecum removed. Its walls were enormously thickened; the ileocecal valve was closed, and the opening of the appendix was reduced to a minute hole. Microscopic examination of the tissue disclosed a typical tuberculosis.

11. Rapid Estimation of Sugar in Urine.—Williamson describes a modification of Gerrard's method. The estimation can be made in a few minutes; only a small amount of urine is required, and the results are sufficiently accurate for most clinical work. The only apparatus required are a test-tube of ordinary size, a small narrow burette and a spirit lamp.

Indian Medical Gazette, Calcutta.

July.

13 *Dysentery in the Prisons of the Madras Presidency. C. F. Fearnside.
14 Dysentery as It Occurs in Jails with Regard to Etiology, Prophylaxis and Treatment. E. Jennings.
15 Relation of Oral Sepsis to Dysentery. F. O'Kinealy.
16 *Etiology of Dysentery, with Notes on Treatment. E. A. C. Matthews.
17 Dysentery: Its Varieties and Causes, Summarized and Criticised with a Note on Treatment and Prevention. A. G. Newell.
18 Use of Izal in Dysentery. F. P. Mackie.
19 Drug Treatment of Dysentery. E. A. R. Newman.
20 Dysentery and Diarrhea Mortality in the Bombay Presidency. W. E. Jennings.
21 *Treatment of Dysentery. B. A. L. Deb.
22 Chemical Process of Sterilizing Water for Drinking Purposes for Use in the Field and at Home. V. B. Nesfield.

13. Dysentery in Prisons.—Fearnside reviews the medical history of the prisons in the Madras presidency since 1867 with reference to the rôle dysentery played in the vital statistics. He concludes as follows: 1. Dysentery in the Madras prisons has accounted for the majority of deaths during the past forty years. 2. Many diseases reported as debility, anasarca, etc., and now not recognized as such, were in reality dysentery. 3. Scarcity of food and bad food predispose to dysentery both outside and inside the jails of the presidency. 4. Impure water has a similar effect, and the obsolete arrangement of the hand delivery of water should be abolished at an early date, taps and shower-baths being introduced. 5. Dysentery being an infectious disease should be treated in an extramural hospital specially built for the purpose. 6. The abolition of the association wards and the introduction of the cellular system is most essential and is an excellent preventive for the spread of any such disease since the person attacked is practicallly segregated, whereas in a barrack this is not so. 7. The abolition of mud banks and the introduction of plank beds, the former being septic and insanitary. 8. Patients who have suffered from dysentery should be kept separate for some time during convalescence as they are dangerous to the community within the prison. 9. The free use of anthelmintics in the treatment of prison dysentery since so many of these individuals harbor internal parasites. 10. Special care, during treatment, should be taken to prevent dysenteric patients receiving food other than that prescribed.

16. **Treatment of Dysentery.**—Matthews washes and dries in the sun the roots and lowest trunks of the ordinary garden geranium. Then he boils one quarter pound in a pint of milk for one hour, adding milk from time to time to make up the pint. This infusion is then strained through fine muslin, and two ounces are given every two hours until the disease is cured, which is usually in from two to six days. Treatment by this drug has several advantages: 1. In most cases, if not prolonged beyond five or six days, it is not necessary to give any other food, the dosage used giving the patient 1¼ pints of milk daily. 2. It is not nauseating; as a rule quickly relieves the nausea and pain in the abdomen, nor is it debilitating. 3. Its action seems to be entirely specific.

21. **Id.**—Deb relates his experience with *Ixora coccnia* in the treatment of acute bloody dysentery. The method of preparation employed was grinding the fresh root on a currystone with a small piece of long pepper and mixing the pulp so produced with water, or by preparing a tincture of 4 ozs. of the root to a pint of proof spirit. The dose of the root was from 10 to 30 grs. two or three times a day and the dose of the tincture from ʒi to ʒiss thrice a day with a few drops of tincture of opium according to the age and constitution and requirements of the patients. Tincture of ixora acts well with or without opium. Tincture of opium or long pepper adds to its efficacy, does no harm and acts promptly. According to Deb, it is not laxative or purgative, nor has it any ecbolic action like ipecac. It is suitable in all cases, especially in the hemorrhagic variety. The effect is noticeable within twenty-four hours after administration of the drug.

Therapie der Gegenwart, Berlin.

23 (XLVI, No. 4.) [illegible] schaft in der inneren M[illegible] ternal medicine). E. R[illegible]

24 *Die [illegible] er Hypersecretion des M[illegible]

25 Ueber [illegible] P. Bergell and A. Braunstein.

26 *Nachweis freien Formaldehyds im Blute nach interner Anwendung (in blood after internal use). P. Rosenberg (Berlin.)

27 *Ueber die Heilung der Astasie-Abasie. D. Hammer (Budapest.)

28 Weitere Beobachtungen zur Salicylbehandlung (die intravenöse [illegible] id., Th. Brugsch.

29 *Zur [illegible] der Tuberkulose der Mesenterialdrüsen [illegible] of mesenteric glands in children). A. Hecht.

30 *Zur ambul[illegible] Unterschenkelgeschwüre (ambulan[illegible]. P. Loele.

31 *Ueber die [illegible] mit Ungt. Credé. W. Born.

32 (XLVI, No. 5.) *Ueber den Einfluss der Aussentemperatur auf die Grösse der Zuckerausscheidung (influence of external temperature on amount of sugar excretion). H. Lüthje (Tübingen).

33 *Zur Verwendung von [illegible] der Herzkrankheiten [illegible] heart affections). A[illegible]

34 Ueber die Bedeutung [illegible] wendung (application [illegible]

34½ Fall von therapeutisch[illegible] bei Morbus Addisonii.

35 Behandlung der spastischen Constipation. A. Albu (Berlin).

36 *Ueber Cyklotherapie der sexuellen Neurasthenie. P. Fürbringer (Berlin).

37 *Einfluss des Urotropins auf die Entstehung der skarlatinösen Nierenentzündung (nephritis). K. Preisich (Budapest).

38 *Ueber Arbeitstherapie (occupation therapy). Otto Veraguth (Zürich).

39 Bemerkungen über Wärmebehandlung von rheumatischen [illegible] treatment of heart affections).

40 Ei[illegible] rheumatischer Erkrankungen.

41 Zu[illegible] is der Säuglinge (coryza in in-

24. **Treatment of Hyperacidity.**—Albu recognizes the following forms of hyperchlorhydria: 1, A purely nervous disturbance of secretion; 2, that accompanying chlorosis; 3, an early stage of peptic ulcer; 4, the expression of a chronic hyperplastic gastritis. The treatment must be primarily dietetic and must not only exclude acid foods, gravies, spices, alcoholics and other irritating materials, but must also provide a detailed diet. The author recommends a vegetable diet in place of the alubuminous diet long considered indispensable, because although albumin combines with HCl, it also increases its secretion. The food must be well cooked and finely divided, if necessary, by putting through a sieve. Starchy foods are well tolerated if made of the finest meal from which the gluten has been practically removed. Fine wheat bread is to be preferred. While coarser vegetables are excluded, fine vegetable purées such as spinach or cauliflower are harmless. Albuminous foods may be taken with the exception of some fatty forms such as goose, pork, bacon, eel, herring, etc. The only fats of value are unsalted butter, milk and cream, and egg fat, because they are so easily emulsified. On account of the favorable action of fat he recommends from 1 to 2 tablespoonfuls of olive oil taken from one to two hours after the principal meals. Cane sugar is well borne by only a few of the patients. Milk, cream, cocoa, chocolate or weak tea may be given if they seem to agree with individuals. Small meals at frequent intervals are best in order to combine quickly the excessive secretion of acid. It is also advisable to eat a little before retiring or on waking, to prevent faintness. In stubborn cases stomach lavage is the best treatment, especially late in the evening, about three hours after the last meal, so as to give an undisturbed night's rest, or, if this is impracticable, in the morning on an empty stomach. The author recommends lavage with water holding in suspension a mixture of magnesium and sodium bicarbonate. To restrain the production of acid he recommends a combination of alkali and belladonna. For constipation he uses vegetable diet, oil, enemata, and an occasional cathartic. Hypersecretion, he states, is usually a complication of gastrectasia, atony, ulcer, hyperchlorhydria, or an independent secretion continuous in Reichmann's disease or intermittent, dependent on disease of the central nervous system. The treatment should depend on the underlying affection. Liquids should be limited in amount. Food should be administered in the form of mush, gruel or purée in small and frequent meals. The milk may be boiled down to half its volume in order to get rid of the useless water, which is even harmful on account of its weight. The choice of nourishment should be exactly like that in hyperchlorhydria, since the latter is always an accompaniment of hypersecretion. Lavage late in the evening serves to remove the excess of secretion and care should be taken to remove all of the fluid introduced.

26. **Free Formaldehyd in the Blood After Internal Use.**—Rosenberg presents experimental evidence that free formaldehyd may exist in the blood to the extent of 0.0775 per cent. after the administration of tablet containing the drug in combination with milk sugar. It is excreted in the urine and in the milk. This quantity, he believes, can act as a disinfectant.

27. **Astasia-Abasia.**—Hammer treats hysterical astasia-abasia (inability to stand or walk) by seclusion in the hospital ward by means of screens that prevent the patient from seeing his neighbors, although he can hear conversation and know what is going on. This fact intensifies the patient's desire to get well and facilitates the other treatment. Suggestion is best carried out in the waking state, as experience has shown this to be more effective than hypnosis. The ex-

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52 Physiologic Importance of Great Omentum.—Die phys. Bedeutung des grossen Netzes. L. Heusner.
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59 Erfahr[illegible] (Incubator). Gutbrod.
60 Eine Verbesserung der Milchpumpe (improved breast pump). M. Forest.
61 *Apparatus for Lavage of Intestine in Children.—Ein einfacher Apparat zur Darmspülung in der kinderärztlichen [illegible]
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63 U[illegible] -nun von Typhus- [illegible] Bemerkungen [illegible] Serodiagnostik. Korte [illegible]
64 Epidemi[illegible] Polymositis.—Akute [illegible] -lerend [illegible] (Commenced in No. 23.)

51. **Spirochetes in Syphilis.**—Fraenkel's findings corroborated those of the discoverers of the *Spirochæte pallida*. He found it constantly in syphilitic lesions, but never in those of other nature.

53. **Castration in Mammary Cancer.**—Michels records his favorable experiences with oöphorectomy in mammary cancer. He reports three cases in which this operation was performed with good results. The mortality of operations for removal of sound ovaries is small. In 102 cases of which he has cognizance only 6 of the patients succumbed, 3 from exhaustion, 2 from embolism of the lungs and 1 in a maniacal attack.

61. **Apparatus for Lavage of Intestines in Children.** A tray with open slats is placed slanting in the child's bathtub, which is supplied with a drain tube and faucet at the foot. Fromm has found this arrangement very convenient for office work. In case he has to use the tub again before there is a chance to clean it, a disinfectant solution is poured over the sides of the tub and the tray, and towels laid over the sides and tray protect the next child against infection from his predecessors.

Jahrbuch f. Kinderheilkunde, Berlin.

Last indexed page 153.

65 *(CXL, No. 4.) Ueber die Mortalität der Diphtherie und des Croup in den grösseren Städten Ungarns mit Rücksicht auf die Serum-Therapie (in Hungarian cities). J. Eröss.
66 Zur chirurgischen Behandlung der Noma. C. Springer.
67 Zur Klinik und Pathogenese des gasartigen Brandes (gangrene). H. Brüning.
68 Measles and "Schweissfriesel," a Special Eruptive Disease. Ueber Röteln und Schweissfriesel. Hoche.
69 (Nos. 5-6.) "Acid Intoxication" in Chronic Gastrointestinal Affections in Infants.—Zur Frage der "Säurevergiftung" beim chronisch magendarmkranken Säugling. M. Pfaundler.
70 Zur Kenntnis der cerebralen Diplegie des Kindesalters und der Mikrocephalie. J. Ibrahim.
71 *Ueber Butter-Milch. G. v. Mamnek (Budapest).
72 Icterus infectiosus epidemicus im Kindesalter (in children). H. Flesch.

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Münchener medizinische Wochenschrift.

51 (LII, No. 24.) *Ueber das Vorkommen der Spirochæte pallida bei Syphilis. C. Fraenkel.
52 Physiologic Importance of Great Omentum.—Die phys. Bedeutung des grossen Netzes. L. Heusner.
53 *Die Kastration beim Mamma-Karzinom. E. Michels.
54 Manual Transformation of Face and Frontal Presentation. Zur manuellen Umwandlung der Gesichts- und Stirnlagen. H. Hellendall.
55 Die chronische Oöphoritis. A. Theilhaber.
56 Ueber menstruellen Ikterus. L. Metzger.
57 Tetanie im Puerperium. Gottschalk.
58 Statistischer Beitrag zur gegenwartigen Genickstarreepidemie (cerebrospinal meningitis). Eggebrecht.
59 Erfahrungen mit Polanos Brutapparat (incubator). Gutbrod.
60 Eine Verbesserung der Milchpumpe (improved breast pump). M. Forest.
61 *Apparatus for Lavage of Intestine in Children.—Ein einfacher Apparat zur Darmspülung in der kinderärztlichen Sprechstunde. E. Fromm.
62 Zur Trachom-Frage. A. Peters.
63 Ueber die agglutinierende Wirkung des Serums von Typhus-Kranken auf Paratyphus-Bazillen, nebst Bemerkungen über makroskopische und mikroskopische Serodiagnostik. Korte and Sternberg.
64 Epidemic of Acute, Recurring Polymositis.—Akute rezidivierende Polymyositis. K. Sick. (Commenced in No. 23.)

51. **Spirochetes in Syphilis.**—Fraenkel's findings corroborated those of the discoverers of the *Spirochæte pallida*. He found it constantly in syphilitic lesions, but never in those of other nature.

53. **Castration in Mammary Cancer.**—Michels records his favorable experiences with oöphorectomy in mammary cancer. He reports three cases in which this operation was performed with good results. The mortality of operations for removal of sound ovaries is small. In 102 cases of which he has cognizance only 6 of the patients succumbed, 3 from exhaustion, 2 from embolism of the lungs and 1 in a maniacal attack.

61. **Apparatus for Lavage of Intestines in Children.**—A tray with open slats is placed slanting in the child's bathtub, which is supplied with a drain tube and faucet at the foot. Fromm has found this arrangement very convenient for office work. In case he has to use the tub again before there is a chance to clean it, a disinfectant solution is poured over the sides of the tub and the tray, and towels laid over the sides and tray protect the next child against infection from his predecessors.

Jahrbuch f. Kinderheilkunde, Berlin.

Last indexed page 143.

65 *(CXL, No. 4.) [illegible] der Diphtherie und des Croup in [illegible] Ungarns mit Rücksicht auf die [illegible] (ungarian cities). J. Eröss.
66 Zur chirurgischen Behandlung der Noma. C. Springer.
67 Zur Klinik und Pathogenese des nomatösen Brandes (gangrene). H. Brüning.
68 Measles and "Schweissfriesel" a Special Eruptive Disease.—Ueber Röteln und Schweissfriesel. Hoche.
69 (Nos. 5-6.) "Acid Intoxication" in Chronic Gastrointestinal Affections in Infants.—Zur Frage der "Säurevergiftung" beim chronisch magendarmkranken Säugling. M. Pfaundler.
70 Zur Kenntnis der cerebralen Diplegie des Kindesalters und der Mikrocephalie. J. Ibrahim.
71 *Ueber Butter-Milch. G. v. Massanek (Budapest).
72 Icterus infectiosus epidemicus im Kindesalter (in children). H. Flesch.

73 Importance of Bacteriologic Examination for Medical Prac- [illegible] Diphtherie-Untersuchung für [illegible]edel.
74 *[illegible] der Chorea Minor. B. N. [illegible] (Moscow).
75 * [illegible] dlichen Blute (marrow cells [illegible] and T. Cybulski (Cracow).
76 Zur Behandlung skrophulöser Kinder (scrofulous children). A. Keller (Breslau).

71. **Buttermilk in Infant Feeding.**—Massanek has been much pleased with the results of buttermilk in feeding the sick infants in his service. All thrived on it remarkably well, as also healthy children. He gives the details of study of the metabolism in a number of the children taking the buttermilk.

74. **Chorea Minor.**—The conclusions from a study of 96 cases are that there is evidently a close connection between acute articular rheumatism, endocarditis and chorea. The combination was apparent in more than 62 per cent. of the cases described. The attack of rheumatism may run an almost latent course, but its effects on the heart become manifest later.

75. **Marrow Cells in Blood of Children.**—The conclusions of Zelenski's work are, in effect, that the presence of marrow cells in the blood of children is not so significant as formerly imagined. They do not have the same diagnostic importance in children as in adults. When nucleated red corpuscles are found in large numbers, especially megaloblasts and giant forms, this indicates a morbid process in the blood at any age, although experience has failed to demonstrate the existence of the so-called infantile pseudoleukemic anemia as a separate entity.

Gazzetta degli Ospedali, Milan.

Last indexed page 365.

77 (XXVI, No. 61.) Flemmone ligneo postoperativo (woody phlegmon). E. Giuliano.
78 Recommendation of Claudius' Catgut.—Sulla sterilizzazione del catgut. B. Gennaro.
79 *Cura delle ulcere varicose e delle superfici granulanti col metodo di Scott Schley. L. Marchetti.
80 New Methods of Obtaining the Specific Sensitizer in Typhoid Serum.—Nuovi metodi di ricerca della sensibilizzatrice specifica nel siero dei tifosi e nel siero degli animali immunizzati contro il bacillo di Eberth. C. Quadrone.
81 (No. 64.) *Germi latenti(stafilococco piogeni albo) nel circolo sanguigno dell' uomo (latent germs in blood). L. Panichi.
82 *Psychic Disturbances and Ear Affections.—Disturbi psichici ed otopatie. V. Grazzi.
83 (No. 67.) Tuberculoma ulcerato della lingua. G. Ghedini.
84 Le cellule eosinofile nel sangue e nello sputo dei tubercolosi. A. Rizzoli.
85 Foreign Bodies in Ear.—Corpi estranei nell orecchio. A. De Blasi.
86 Sopra alcune reazioni colorate delle aldeidi formica ed acetica, dell' acetone e del benzochinone, e sulle loro probabili applicazione agli studii medicin (color reactions of formaldehyd, etc.) E. Pittarelli.
87 (No. 66.) *Mezzo semplicissimo per sterilizzare in qualche minute ogni catetere (to sterilize a catheter in a few minutes). [illegible]
88 (No. 70.) [illegible] dei limiti plessimetrici nella pericard[illegible]ta (rapid reduction of plessimeter [illegible]
89 Puntura esplorativa e massaggio nella cura dell' idrocele nei bambini (hydrocele in children). U. A. Betti.
90 [illegible] G. Ghedini.
91 * [illegible]cnica delle iniezioni endovenose di [illegible]avenously). M. Sciallero.

79. **Boric Acid Treatment of Varicose Ulcers.**—Marchetti has been much gratified by the success of the Scott Schley method of treating varicose ulcers and granulating surfaces, which he has used in 23 cases. Finely pulverized boric acid is scattered copiously over the surface, covered with four thicknesses of fine rubber tissue, extending from 2 to 5 cm. beyond the lesion, and fastened in place with adhesive plaster. Gauze is applied over this and the dressings are left undisturbed for from five days to a week or more. All the extensive lesions healed rapidly, the longest time required being twenty-seven days, in one case of extensive septic ulceration of the leg, with general symptoms. The average for the other cases was from fifteen to twenty days. These results in dispensary patients were truly surprising as such cases are apt to be tedious even with intelligent co-operation on the part of the patient, which can not always be anticipated.

81. **Staphylococci Latent in the Blood.**—Panichi reports two cases from Tizzoni's clinic at Bologna in which a furuncle or phlegmon was followed by the constant finding of the *Staphylococcus pyogenes albus* in the blood during several weeks and months after the individuals were apparently in the best of health. One patient was a gardener of 44 and the other a girl of 16. The latter presented a subcutaneous abscess in the nipple region a few weeks after a diffuse eczema, during which the staphylococcus first had been noted in the blood.

82. **Mental Disturbances and Ear Affections.**—Grazzi read this communication before the Fifth International Congress of Psychology last April at Rome. He has had occasion to observe a number of cases in which mental disturbances occurred in the course of ear affections. Diffuse otosclerosis seems to be most dangerous in this respect. Treatment of the ear affection is liable to improve or to cure the other disturbances, hence the necessity for frequent inspection of the ear by otologists in cases of neuropathy in which the physician has reason to suspect the existence of some ear trouble.

87. **Minute Sterilization of Catheter.**—Ingianni puts the catheter in a urine glass test-tube filled with a saturated solution of sodium sulphate. The tube is lengthened by slipping over it a rubber tube about 30 cm. long by 15 mm. in circumference. A cork with a hole through it and a groove along the side is used to plug the top of the rubber tube. The tube is then held over the flame of an alcohol lamp, and as the water boils in the test-tube the catheter is thoroughly sterilized in a minute or so. The catheter need not extend down to the bottom of the straight test-tube, and the pliant rubber fits its curve without trouble. Tests of catheters thus sterilized by the boiling sodium sulphate and the steam have shown that the results are perfect. If metal catheters are to be sterilized water alone or with sodium carbonate is preferable.

91. **Intravenous Injection of Oxygen.**—Sciallero describes with illustrations a simplified technic for injecting oxygen into the veins. The procedure is so simple that it brings within the reach of everyone, he says, this heroic therapeutic measure which promises good results.

Archiv f. Verdauungs-Krankheiten, Berlin.

Last indexed XLIV, page 508.

92 (XI, No. 1.) *Zur Frage der chemischen Funktionsprüfung des Magens (chemical tests of stomach functions). B. Wagner (Rostock).
93 *Zur Lehre von den Infusorien, die als Parasiten im Verdauungskanale des Menschen vorkommen; ein Fall von Balantidium coli im Darm des Menschen (infusoria in human digestive tract). I. I. Koslowsky (St. Petersburg).
94 *U[illegible] duodenalis in Japan. Z. Inouye.
95 *U[illegible]agen-Darmerkrankungen speziell [illegible]stomach and intestine). H. Ury [illegible]).
96 (N[illegible]ler Kolik. H. Nothnagel.
97 *G[illegible] bei Hungerkur des peptischen Magengeschwürs (gastric ulcer). N. Reichmann (Warsaw).
98 Ueber die Bindung des Chlors in der Magenschleimhaut (binding of chlorin in gastric mucosa). F. Dauwe (Gand).
99 Einfache Methoden zur quantitativen Bestimmung der vom Magen ausgeschiedenen Enzyme (estimation of ferments secreted by the stomach). H. Illoway (New York).
100 Fall von Cœcum volvulus. M. Buch (Helsingfors).

92. **Chemical Tests of Stomach Functions.**—Wagner gives the results of examination of the stomach contents in 430 cases, considered in four classes: 1, Diseases in general; 2, organic diseases of stomach; 3, functional stomach diseases; 4, blood diseases. A larger number of men than women were affected with hyperchlorhydria. The large total of cases in which acidity may be classed as normal is especially important, as it amounted to fully one-half. His investigation of patients with ulcer showed 54 per cent. women and 46 per cent. men. Contrary to the rule of Riegel, Wagner found that hyperchlorhydria was present in less than half of the cases of ulcer. Nearly 25 per cent. of all the patients with hyperchlorhydria were affected with ulcer. For a certain diagnosis of ulcer it is sometimes necessary to introduce the stomach tube, and, if done carefully, this can be accomplished with little danger. In order to determine whether free blood be present in the stomach, a test lavage is given by pouring 100 c.cm. of water down the tube as soon as it reaches the middle of the esophagus, the tube being then pushed in without fear and the water removed. Occasionally retching occurs, with a flow of blood, in which case the tube should be immediately removed and the diagnosis considered established. This accident seldom gives rise to any serious consequences. The guaiac test for blood is not only somewhat too delicate for clinical use, but also gives the same results when pus, bile or saliva are mixed with the fluid to be tested, as is often the

case with stomach contents. In spite of this it is a great help in the diagnosis of gastric ulcer and of carcinoma of the esophagus or cardiostenosis, when the stomach contents can not be obtained, or in controlling the progress of healing in case of ulcer. The author found no free HCl in 90 per cent. of his cases of carcinoma. Discovery of blood in the feces of carcinoma patients seems to be of little value, since it was found in but two out of six cases in which the diagnosis of cancer had been definitely established by other means. He divides achylia gastrica into simple and complex, the latter occurring in patients with pernicious anemia. Another blood disease commonly associated with hyperacidity is chlorosis, which is accompanied by an abnormal appetite. Five out of 14 cases were found to have hyperchlorhydria. Wagner concludes that it is difficult to fix a rule for the condition of the stomach contents in certain diseases, but that there are general characteristics which are an important help in diagnosis. The cases in which the proportions of acid are characteristic are few and comprise only organic stomach diseases, namely, ulcer and carcinoma, and blood diseases.

93. **Infusoria as Parasites in Human Digestive Canal.**—Koslowsky mentions 105 cases of *Balantidium coli*, and believes that more occur than are generally recognized owing to the facts that helminthiasis from the feces are so seldom examined, that the parasites decompose readily, and that numbers of cases have not been published. Reports show that this condition usually appears as a complication, especially of intestinal diseases. At the autopsy in 30 and on microscopic examination of the tissues in 9 cases, the pathologic changes were most pronounced in, and generally confined to, the rectum and large intestines. The process was generally limited to catarrh. Long continuance of the affection may cause ulcers reaching through the mucous membrane to the submucosa or muscularis; by confluence these ulcers may attain a diameter of 3 to 4 cm. The parasite was found in all layers of the mucous membrane, even in the lumen of the small veins, but most frequently in the submucosa. His experiments on rabbits and guinea-pigs showed no evidence of infection and pigs could not be infected. He describes his methods of fixing and staining, and the development, degeneration and death of the *Balantidium coli*. He states that it can live in the dead body from ten to seventy-two hours. The embryos may be mistaken for the eggs of *Bothriocephalus latus*. He also mentions two other kinds of ciliated parasites which have been found in the human intestine.

94. **Ankylostomiasis in Japan.**—Inouye states that ankylostomiasis is found in all parts of Japan, most commonly among farmers, since human excrements are used in fertilizing and insufficient care is taken in preparing food. More men than women are affected. The malady begins gradually and may be latent as long as three months. Its severity depends on the number of worms, their length of stay in the intestine, and the resisting power of the patient. The victims are at first affected with vague digestive disturbances, become pale, complain of palpitations, lack of breath, dropsy, anemia and finally die. The local symptoms are pressure and fullness in the epigastrium, intestinal pain, heartburn, nausea and vomiting. The author found no blood or worms in the vomitus, stomatitis is rare, there is increase of saliva, foul breath, solid stools and occasionally diarrhea. The eggs found in the stools by microscopic examination have bright shells and brownish grooved kernels. He does not regard Charcot's crystals in the feces as pathognomonic for ankylostomiasis since they occur with other parasites and are not always present with this worm. The appetite is generally good, but parorexia is often present, the patient wanting peculiar things to eat (pepper, vinegar, raw rice, charcoal, tobacco, plaster or nails). Geophagia was observed only once. Parorexia is proportionate to the grade of anemia. The author finds, in contradistinction to Tanaka, that when the affection is complicated with carcinoma there is less free HCl and the lactic acid reaction is very distinct. Liver enlargement is frequent. It is difficult to decide whether splenic enlargement is due to the worms or to complicating disease. Inouye attributes a diagnostic significance to eosinophilia. He notes the changes in the nails as characteristic. They become yellowish, brittle, parchment-like and tear easily lengthwise. The surface shows wavy projections and furrows and the nails curve backward. These changes disappear with the expulsion of the worm, and they are proportional to the anemia. Various nervous symptoms and even epileptic attacks are liable to occur. He found the knee-jerk normal. He holds that the anemia can not be explained simply as a result of hemorrhage, and with many other Japanese authors adheres to the toxic theory of anemia. The following precautions should be taken for prophylaxis: Disinfection of feces with milk of lime, careful disinfection of materials used as fertilizers, avoidance of raw vegetables in the diet or of eating with soiled hands in the fields, or drinking polluted water. Two remedies are recommended for the expulsion of the worm: Oil of male fern and thymol. The first should be administered with the following precautions. The dose must not exceed 5 gm.; castor oil must not be given with the fern oil, and the latter should not be given for several days in succession. Ankylostomiasis must always be treated in a hospital, and as soon as the patient complains of pain in the eyes, disturbances of vision or dilatation of the pupils, the treatment must be suspended. He thinks that thymol is to be preferred and recommends it in doses of from 2 to 3 gm. (grs. xxx to xlv) on an empty stomach, followed after some hours by a cathartic (castor oil); this treatment is repeated daily until all worms have been expelled. Symptoms of poisoning which occasionally arise usually disappear when the treatment is temporarily suspended, fail to reappear when it is recommenced. The thymol treatment is often somewhat dangerous in advanced cases because of the temporary increase of debility.

95. **Albumosuria.**—Ury and Lilienthal have examined 40 cases of carcinoma for albumosuria and conclude as follows: 1. Two-thirds of all cases of carcinoma show a positive albumose reaction in the urine, although it varies greatly at different times in the same case. 2. Albumosuria is occasionally found in rare cases of benign stomach or intestinal affections. 3. Maixner's theory that albumose is generated in the intestines seems quite improbable. It probably originates in the tissues. Albumosuria may be absent, however, in far advanced, decomposing cases of carcinoma. 4. The discovery of albumose in the urine has no positive significance for diagnosis of cancer of the intestinal tract, but repeated positive results may confirm the presence of malignant disease. 5. Albumosuria frequently appears to be present in febrile cases.

96. **Pathogenesis of Colic.**—Nothnagel discusses the views of Meltzer, Wilms and Lennander in regard to colic, and concludes that the original term colic, should be retained for intestinal pain of a special kind in relation to its pathogenesis and clinical form. This pain arises in the intestine itself. A tetanic contraction of the intestinal musculature is effective as a primary factor in its origin. This contraction leads to ischemia, or even anemia, of the intestinal wall, by pressure on the blood vessels and thus produces the pain. How far this theory of colic may be applied to other organs provided with smooth muscular fiber is not discussed, but the author believes it to be true in regard to colic of the bladder.

97. **Dangerous Complications in Starvation Treatment of Peptic Ulcer.**—Reichmann calls attention to two dangerous complications in the treatment of peptic gastric ulcer: Loss of strength and disturbance of the heart's action which may necessitate abandonment of the treatment, and purulent parotitis, of which he has seen three cases during twelve years, one of which terminated fatally. The probable cause is the entrance of bacteria from the mouth into the parotid ducts. This is due to lack of mastication, which prevents the flow of saliva and cleansing of the mucous membrane and ducts. This complication can be prevented by applying a 4 per cent. solution of boric acid with a swab to the surface of the mucous membrane, especially that of the cheeks. The starvation treatment need not be abandoned because of these dangers, as with care these complications can be avoided.

Hospitalstidende, Copenhagen.

Last indexed XLIV, page 1819.

101 (XLVIII, No. 1[illegible]) [illegible] of Diplo-bacillus Conjunctivit [illegible] og dens Behandling. K. K.
K. [illegible]

The lighting of hospitals, however, can not be governed by any one hard and fast rule. We can always stand safely on the decision that sunlight and brilliant, diffused daylight are curative agents of the first rank, demanding free admission through generous window space to the wards of a hospital, and general wards should be as well lighted as any school room, so that physicians and nurses shall at all times be able to see their patients even from a distance and to observe minutely the color and texture of the skin and the expression of the face and be able to read in all parts of the ward the labels on boxes and bottles and the scale of the thermometer. There often arises, on the other hand, the urgent necessity for the exclusion of all or part of the light. There should be provided for all medical, surgical and neurologic wards small wards or rooms which can be partially or totally darkened, for

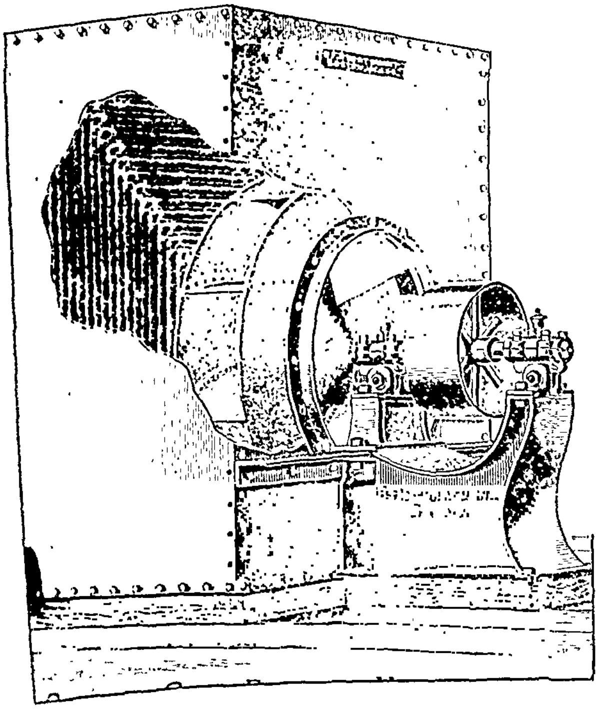

Figure 1.

it is a stimulus and conditions not infrequently
se, e. g., lead encephalopathy, traumatic meningitis
and chorea major, in which all external stimuli must
reduced to the minimum. In ophthalmology, of
this is of paramount importance. The eye is
terminal of one of the largest, most sensitive and
important nerves in the body, and its whole
anism, nervous, vascular and muscular, resp nds
the greatest sensitiveness and delicac
s of light. In almost all conditic
fore, we mu
will.
is nec
Th

electric light, I exclude daylight altogether—even on bright days—and employ electricity exclusively.

A much more difficult problem than the admission of light is the induction of air into a building. To give you something of an idea of what an important question this is both from the standpoint of mechanical engineering and of administrative expense, let me rehearse to you a few figures from the calculations of one of our foremost experts on ventilation. After quoting the results of Pettenkofer's experiments on respiration, he says: "Able authorities are of the opinion that when the CO_2 is maintained at 2/10000 in excess of what is found in the outer air, that it (the ventilation) is at least good; in which case there will have to be admitted 3,000 cubic feet of fresh air per person per hour while in repose, 4,500 cubic feet for persons at gentle exercise, and 9,000 cubic feet for persons at hard work." This certainly seems to be a liberal standard to maintain, and the best authorities now seem to think it is ample in cold climates in winter, as the cost of ventilation must enter into the question, particularly when a great number of persons have to be provided for in comparatively restricted space, such as hospitals, schools, etc. It is customary in hospitals to provide for a minimum admission of 3,000 cubic feet of air per bed per hour, with mechanical means of increasing the admission to 6,000 cubic feet of air per bed per hour when it is deemed necessary. This amount of air seems to cover the contingencies and insure a standard in which the excess CO_2 will be about 2/10000.

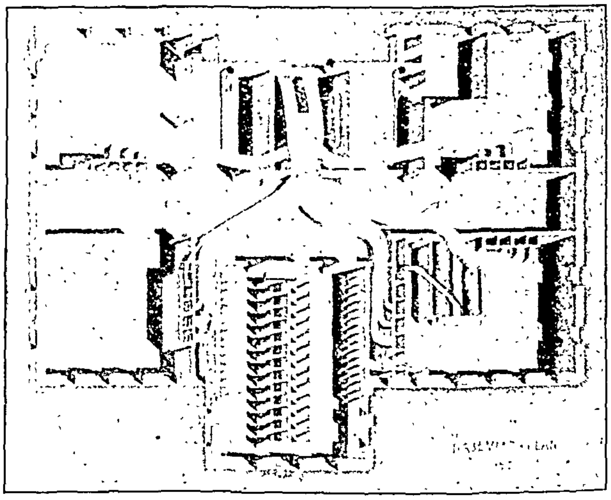

Figure 2.

In passing, I would beg to remind you that the
amount of carbonic acid present in the atmosphere may
readily ascertained to a sufficiently close degree for
purposes in the following manner: Six clean,
stoppered bottles of a capacity, respective-
50, 300, 350 and 400 c.c., a glass tube
c.c. to a given mark and a bottle
lime water constitute the appa-
should be filled by means
atmosphere to be exam-
5 c.c. of the lime
l. If turbidity
ast 16 parts in
bottle of 200
is would indi-
turbidity

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Address

STUDIES OF SCHOOL AND HOSPITAL HYGIENE OF INTEREST TO THE OPHTHALMIC SURGEON.

CHAIRMAN'S ADDRESS BEFORE THE SECTION ON OPHTHALMOLOGY, AT THE FIFTY-SIXTH ANNUAL SESSION OF THE AMERICAN MEDICAL ASSOCIATION, PORTLAND, ORE., JULY 11-14, 1905.

CHRISTIAN R. HOLMES, M.D.

CINCINNATI.

It is, perhaps, unnecessary to remind the members of this Association of the amazing expansion of all human activities in this country in the past few years. The increase in population, the activities of the new centers of industry, and the awakening of the older and more settled parts of the country are little short of the marvellous. Hand in hand with industrial development and the pursuit of pleasure have gone the humanitarian and the scientific spirit, and we find that a very respectable proportion of our efforts of to-day are given to the building of new schools, colleges and hospitals. As a people we are slowly awakening to the importance of properly lighting, heating and ventilating these new buildings in accordance with scientific laws.

We no longer take old buildings and try to remodel them so as to make them resemble what a school, college or hospital should be, but every community that realizes the necessity for new institutions of this character is making an earnest effort to have them constructed on the latest and most approved principles and is installing in them new devices for making them convenient for the purposes for which they are built and comfortable and sanitary for the human beings who are to live or to work in them.

The object of and the justification for the modern refinement of specialization is to promote efficiency. Schools, colleges, hospitals and asylums are becoming specialized. It is obvious that for the highest efficiency in its own particular line each of this class of buildings must have its own peculiarities of construction and equipment. This subject is so varied and vast that in a brief paper like this I can do no more than merely call your attention to a few points of importance relating to light, heat and ventilation.

The sanitarian, of course, includes in his province a multitude of subjects, but we can consider that our greatest concern is with the three subjects just mentioned. The problem of the lighting of school houses is comparatively an easy matter. A law has been laid down that we all recognize as one that can not be broken without disaster to the children's eyes. It is well expressed by Dr. Risley in one clear-cut sentence: "It is the duty of the architect to secure in his plan all the window surface possible consistent with safety of construction."

Cohn places the proportion of this window surface to floor space at not less than thirty square inches of glass to each square foot of floor space, or about one to five: but the effort should always be made to exceed this proportion, and, indeed, we are told of one instance in which the proportion is one to one. Again, for obvious reasons, it is perfectly evident from what direction the light should fall on the desks of the pupils—they should face a blank wall of neutral tint, and abundant light should be admitted from the left or left and rear, so that the writing hand should cast no shadows on the writing surface. This is the law of the school house, and it is for us to express ourselves so unequivocally and so constantly that neither the architects nor school committees will dare to violate it.

We have to-day in the United States about 16,000,000 pupils in the various schools and colleges. It is unfortunately a well-known fact that a fairly large percentage of these begin to deteriorate physically soon after entering school life, and a certain proportion of these are brought to the notice of the oculist on account of a progressive myopia. Out of 30,095 children examined in the schools of Cleveland in 1899-1900, 20 per cent. were found to have defective sight, and in Indianapolis out of 25,696 pupils examined 8,166, or 32 per cent. were trying to do school work with defective vision. Of course, only a portion of these were myopes, and we never have attained, and probably never will attain, the unfavorable figures of the German schools, which, according to their own scientists, were largely due to the use of the old "black letter" type; but, while it is possible that prolonged use of the eyes in study even under favorable conditions of light and good hygienic surroundings would produce a certain amount of myopia in some subjects, yet there is not the slightest doubt but that poor light, improperly proportioned desks and seats, resulting in faulty positions of the pupil and lowered vitality because of impure air due to faulty ventilation, are the agents most responsible for the large percentage of the myopia that we find in America to-day.

I heartily agree with Dr. Risley in his proposal that our schools should introduce a modified curriculum adapted to the physical capabilities of those scholars whose eyes may be defective or who may otherwise be in feeble health. Their hours of eye and brain work should be cut down or so distributed through the day or interspersed with hours of exercise and recreation as not to become a strain that a weak eye or a weak body would feel as a burden. For this reason also competitive examinations for this class of pupils—if not for all classes—should be abolished, and the scholar should be graded by the efficiency of his daily work, and not by the results attained by excessive and prolonged work at annual or semi-annual intervals. Injury to the eyes and to the general health is, unfortunately, a not infrequent result of this "cramming for examination"

102 (No. 13.) Improved Fan-shaped Spatula.—En vifteformet Laparotomie-spatel. P. K. Faber. (Rovsing's clinic, Copenhagen).
103 Alcohol as Cause of Increase of Crime and Mental Affections.—Om Alkohol som Aarsag til Forbrydelse og Sindssygdom. F. Hallager.
104 (No. 15.) *Milk Diet in Chronic Tropical Diarrhea. Maelkediaet ved Kron. Tropediarré "Sprue.".
105 (Nos. 16-17.) *Research on Infantile Marasmus.—Undersögelse over Borneatrofien. C. E. Bloch.
106 (Nos. 18-20.) *Om kronisk Parotitis. A. Lendorf.
107 Alcohol Mortality.—Alkoholdodelighed. G. Poulsen.
108 Case of Leukemic Hemorrhages in Internal Ear.—Tilfaelde af leuk. Blodninger i det indre Ore. A. Kock.
109 *(No. 21.) *Om Extra-systole. H. I. Bing.*
110 Om Gonokok-farvning (staining). A. Bronnum.
111 (No. 22.) *Indikationer og Kontraindikationer for Nefrektomi, saerligt ved Nyre-tuberkulose (of kidney). T. Rovsing.

101. **Diplobacillus Conjunctivitis.**—Lundsgaard describes the course of this conjunctivitis, which seems to be quite prevalent in Denmark. It is usually suggested by the characteristic redness of the caruncle and the margins of the eyelids, but bacteriologic examination is necessary for differentiation from ordinary epiphora or phlyctenular conjunctivitis, which it is liable to simulate at times. A 2.5 per cent. solution of zinc sulphate generally cures, but some cases do better with a zinc salve or yellow ointment.

104. **Milk Diet in Tropical Diarrhea.**—Vogelius treated a patient who had just returned from the tropics with obstinate diarrhea by putting him on a strict milk diet after failure of other attempts to disinfect the intestines. Less than a quart was allowed at first and he rapidly improved, taking two quarts and then three quarts a day, gradually resuming a mixed diet as health returned.

105. **Infantile Marasmus.**—Bloch relates the particulars of 3 more cases of general atrophy in children, which, added to those he has previously reported, makes 6 cases. In 3 cases he noted during life and at the autopsy evidences of gastric hypochylia and in the 3 others evidences of pancreatic achylia. The secreting cells of the pancreas were found empty in some of the cases; in others Lieberkühns glands were unmistakably defective. In the former group, the symptoms during life had suggested insufficiency of the pancreas. The article is accompanied by two plates and the various pathologic anatomic findings are described in detail.

106. **Chronic Parotitis.**—Lendorf reports 2 cases in which a supposed tumor in the parotid gland was found on exploratory incision to be a chronic interstitial inflammation. No calculi were found in Steno's duct nor stenosis, and the inflammation subsided under local measures—extirpation of the circumscribed mass in one case and mere fomentations in the other, with potassium iodid internally. A few similar cases are on record. Chronic parotitis may be of toxic origin, or due to syphilis, tuberculosis or actinomycosis, or secondary to calculi, sialorrhea, or a foreign body, or it may be apparently primary, as in the cases related, and may simulate a tumor.

109. **Extra Systole.**—Bing describes 4 cases of this affection in which it was the only sign of heart affection. It was probably of nervous origin in one case and secondary to diphtheria in the others.

111. **Indications and Contraindications for Nephrectomy.**—This article was read by Rovsing to open the discussion on this subject at the German Congress of Surgery last April. It is based on his experiences with 112 nephrectomies. Since 1901 the mortality in 33 cases in which the kidney had been removed on account of tuberculosis was only 3 per cent.; in 13 malignant tumors the mortality was zero, as also in 5 of hydronephrosis and pyelonephritis. In 7 cases of pyonephrosis the mortality amounted to 14.2 per cent. The mortality for these groups in the nine years before 1901 had been respectively 14.2 per cent. in 14 cases of tuberculosis and 27 per cent. in 18 malignant tumors. He thinks that the assumption, when the proportion of urea is very small, is not justified by the facts. He performed nephrectomy—notwithstanding the very low proportion of urea—in 31 out of his 112 nephrectomies, and only two of the patients succumbed to anuria. The findings with cryoscopy were frequently misleading. In 12 out of the 50 cases in which he tested the freezing point the findings were absolutely false in 12 instances, as for example, normal values with unmistakable Bright's disease. He does not accept cryoscopy, the phloridzin test nor determination of the proportion of urea as very accurate tests of kidney functioning, the last named being the most reliable. Catheterization of the ureters, with bacteriologic and chemical tests of the urine affords valuable information. If he finds bacteria, albumin and pus in the urine from the other kidney he waits until these are cured before removing its mate. But if albumin alone is found, then he performs nephrectomy, convinced that the albuminuria is of toxic origin, regardless of whether this assumption is confirmed by the freezing point or phloridzin tests or not.

Hygiea, Stockholm.

Last indexed XLIV, page 1498.

112 (LXVII, Nos. 2-3.) *Importance of Manual Compression of Aorta in Post-partum Hemorrhages.—Betydelsen af manuell aortakompression vid blödningar i efterbördsstadiet. H. Suber.
113 Treatment of Suppurative processes in the Cornea.—Om behandlingen af suppurativa processer i hornhinnan. J. Holmström.
114 Ob[illegible] lössning uppkommen arm-[illegible]. Bovin.
115 (N[illegible] of Secretions in Super-[illegible] undersokningen af sekre-[illegible] M. Möller.
116 New Insane Asylum.—En ny anstalt for sinnessjuka. G. Schuldheis.
117 Climatology.—General Karakteristik af Klimaterne og deres Indikationer. I. C. Holm.
118 (Nos. 5-6.) Studier ofver eksem och impetigo contagiosa. L. Moberg.
119 *Surgical Treatmen[illegible]ditis with Effusion.—Om d[illegible]len exsudativa, icke varig[illegible] Sjövall.
120 Till uterus-inversi[illegible]
121 Treatment with [illegible] Sjukdomars behandling med [illegible] E. Beckman.
122 Disturbances in Orientation.—Om vilsegaende. D. Andersson.
123 Should the Gall Bladder [illegible] the Ordinary Operations for [illegible] aflagsnas eller bibehallas, etc. [illegible]

112. **Manual Compression of Aorta for Postpartum Hemorrhage.**—Suber's experiences with 6 cases and another observed in Bissmark's care, has convinced him of the great efficacy of this means of arresting or preventing hemorrhage. He thinks it should be adopted as a routine measure in all severe or dangerous hemorrhages and when there is uncertainty in regard to the cause of the hemorrhage. Also in case of intervention liable to be accompanied by hemorrhage, especially when there has been much loss of blood previously. A further indication is to gain time for aseptic and rational measures to arrest the hemorrhage in some other way. It is also indicated when the uterus reacts feebly or not at all to mechanical procedures, and when the circumstances forbid further loss of blood. It also renders it possible to postpone an intervention until conditions are more favorable for its success. He adds that compression of the aorta is liable to prove extremely important also in hemorrhage from inversion or rupture of the uterus or from abortion or mole.

119. **Surgical Treatment of Pericarditis with Effusion.**—Sjövall's communication may be summarized in the advice to operate at once in every case of pericarditis with effusion, not suppurative. The intervention should be pericardotomy, preferably Ollier's technic. The accumulation of the effusion impedes the action of the heart, and its removal is a necessity, as he shows by relating his experience with two patients, each 16 years old, both restored to health by simple pericardotomy. In one pericarditis had followed acute articular rheumatism.

Books Received

A MANUAL OF CLINICAL CHEMISTRY, MICROSCOPY AND BACTERIOLOGY. M. Klopstock and A. Kowarsky of Berlin. Translated by T. Wright, M.D. Cloth. Pp. 296. With 132 Illustrations, 70 in colors. Price, $2.25. New York: Rebman Co., 1905.

CHANGES IN THE PHARMACOPEIA OF THE UNITED STATES OF AMERICA, Eighth Decennial Revision (Official from Sept. 1, 1905). R. Hunt and M. G. Motter. Paper. Pp. 122. Washington: Government Printing Office, 1905.

ANNUAL PRICE CURRENT, DRUGS, CHEMICALS, MEDICINES. Cloth Pp. 1389. Chicago: Peter Van Schaack & Sons, Wholesale Druggists, 1905.

TENTH BIENNIAL REPORT OF THE NORTH CAROLINA BOARD OF HEALTH. 1903-1904. Paper. Pp. 109. Raleigh: E. M. Uzzell & Co., 1905.

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Address

STUDIES OF SCHOOL AND HOSPITAL HYGIENE OF INTEREST TO THE OPHTHALMIC SURGEON.

CHAIRMAN'S ADDRESS BEFORE THE SECTION ON OPHTHALMOLOGY, AT THE FIFTY-SIXTH ANNUAL SESSION OF THE AMERICAN MEDICAL ASSOCIATION, PORTLAND, ORE., JULY 11-14, 1905.

CHRISTIAN R. HOLMES, M.D.
CINCINNATI.

It is, perhaps, unnecessary to remind the members of this Association of the amazing expansion of all human activities in this country in the past few years. The increase in population, the activities of the new centers of industry, and the awakening of the older and more settled parts of the country are little short of the marvellous. Hand in hand with industrial development and the pursuit of pleasure have gone the humanitarian and the scientific spirit, and we find that a very respectable proportion of our efforts of to-day are given to the building of new schools, colleges and hospitals. As a people we are slowly awakening to the importance of properly lighting, heating and ventilating these new buildings in accordance with scientific laws.

We no longer take old buildings and try to remodel them so as to make them resemble what a school, college or hospital should be, but every community that realizes the necessity for new institutions of this character is making an earnest effort to have them constructed on the latest and most approved principles and is installing in them new devices for making them convenient for the purposes for which they are built and comfortable and sanitary for the human beings who are to live or to work in them.

The object of and the justification for the modern refinement of specialization is to promote efficiency. Schools, colleges, hospitals and asylums are becoming specialized. It is obvious that for the highest efficiency in its own particular line each of this class of buildings must have its own peculiarities of construction and equipment. This subject is so varied and vast that in a brief paper like this I can do no more than merely call your attention to a few points of importance relating to light, heat and ventilation.

The sanitarian, of course, includes in his province a multitude of subjects, but we can consider that our greatest concern is with the three subjects just mentioned. The problem of the lighting of school houses is comparatively an easy matter. A law has been laid down that we all recognize as one that can not be broken without disaster to the children's eyes. It is well expressed by Dr. Risley in one clear-cut sentence: "It is the duty of the architect to secure in his plan all the window surface possible consistent with safety of construction."

Cohn places the proportion of this window surface to floor space at not less than thirty square inches of glass to each square foot of floor space, or about one to five; but the effort should always be made to exceed this proportion, and, indeed, we are told of one instance in which the proportion is one to one. Again, for obvious reasons, it is perfectly evident from what direction the light should fall on the desks of the pupils—they should face a blank wall of neutral tint, and abundant light should be admitted from the left or left and rear, so that the writing hand should cast no shadows on the writing surface. This is the law of the school house, and it is for us to express ourselves so unequivocally and so constantly that neither the architects nor school committees will dare to violate it.

We have to-day in the United States about 16,000,000 pupils in the various schools and colleges. It is unfortunately a well-known fact that a fairly large percentage of these begin to deteriorate physically soon after entering school life, and a certain proportion of these are brought to the notice of the oculist on account of a progressive myopia. Out of 30,095 children examined in the schools of Cleveland in 1899-1900, 20 per cent. were found to have defective sight, and in Indianapolis out of 25,696 pupils examined 8,166, or 32 per cent. were trying to do school work with defective vision. Of course, only a portion of these were myopes, and we never have attained, and probably never will attain, the unfavorable figures of the German schools, which, according to their own scientists, were largely due to the use of the old "black letter" type; but, while it is possible that prolonged use of the eyes in study even under favorable conditions of light and good hygienic surroundings would produce a certain amount of myopia in some subjects, yet there is not the slightest doubt but that poor light, improperly proportioned desks and seats, resulting in faulty positions of the pupil and lowered vitality because of impure air due to faulty ventilation, are the agents most responsible for the large percentage of the myopia that we find in America to-day.

I heartily agree with Dr. Risley in his proposal that our schools should introduce a modified curriculum adapted to the physical capabilities of those scholars whose eyes may be defective or who may otherwise be in feeble health. Their hours of eye and brain work should be cut down or so distributed through the day or interspersed with hours of exercise and recreation as not to become a strain that a weak eye or a weak body would feel as a burden. For this reason also competitive examinations for this class of pupils—if not for all classes—should be abolished, and the scholar should be graded by the efficiency of his daily work, and not by the results attained by excessive and prolonged work at annual or semi-annual intervals. Injury to the eyes and to the general health is, unfortunately, a not infrequent result of this "cramming for examination."

The lighting of hospitals, however, can not be governed by any one hard and fast rule. We can always stand safely on the decision that sunlight and brilliant, diffused daylight are curative agents of the first rank, demanding free admission through generous window space to the wards of a hospital, and general wards should be as well lighted as any school room, so that physicians and nurses shall at all times be able to see their patients even from a distance and to observe minutely the color and texture of the skin and the expression of the face and be able to read in all parts of the ward the labels on boxes and bottles and the scale of the thermometer. There often arises, on the other hand, the urgent necessity for the exclusion of all or part of the light. There should be provided for all medical, surgical and neurologic wards small wards or rooms which can be partially or totally darkened, for light is a stimulus and conditions not infrequently arise, e. g., lead encephalopathy, traumatic meningitis and chorea major, in which all external stimuli must be reduced to the minimum. In ophthalmology, of course, this is of paramount importance. The eye is the terminal of one of the largest, most sensitive and most important nerves in the body, and its whole mechanism, nervous, vascular and muscular, responds with the greatest sensitiveness and delicacy to the stimulus of light. In almost all conditions of irritation or inflammation, therefore, we must be able to temper or banish the light at will.

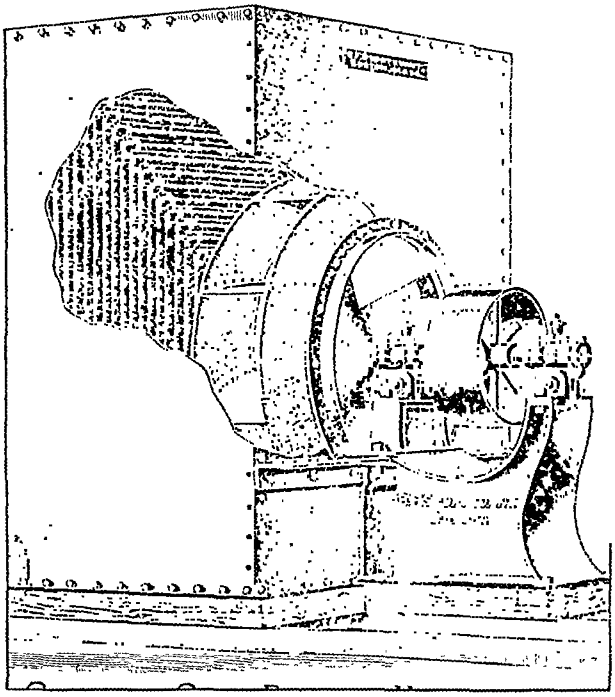

Figure 1.

In this connection it is necessary to consider the question of artificial light. This is not difficult as far as the operating room is concerned. In my own operating room, I have found it necessary to adopt the incandescent electric light as a permanent source of illumination. In the midst of a great manufacturing city where bituminous coal is universally used it is impossible to depend on the varying quality and quantity of daylight, so that, now being thoroughly familiar with the appearance and colors of tissues under the electric light, I exclude daylight altogether—even on bright days—and employ electricity exclusively.

A much more difficult problem than the admission of light is the induction of air into a building. To give you something of an idea of what an important question this is both from the standpoint of mechanical engineering and of administrative expense, let me rehearse to you a few figures from the calculations of one of our foremost experts on ventilation. After quoting the results of Pettenkofer's experiments on respiration, he says: "Able authorities are of the opinion that when the CO_2 is maintained at 2/10000 in excess of what is found in the outer air, that it (the ventilation) is at least good; in which case there will have to be admitted 3,000 cubic feet of fresh air per person per hour while in repose, 4,500 cubic feet for persons at gentle exercise, and 9,000 cubic feet for persons at hard work." This certainly seems to be a liberal standard to maintain, and the best authorities now seem to think it is ample in cold climates in winter, as the cost of ventilation must enter into the question, particularly when a great number of persons have to be provided for in comparatively restricted space, such as hospitals, schools, etc. It is customary in hospitals to provide for a minimum admission of 3,000 cubic feet of air per bed per hour, with mechanical means of increasing the admission to 6,000 cubic feet of air per bed per hour when it is deemed necessary. This amount of air seems to cover the contingencies and insure a standard in which the excess CO_2 will be about 2/10000.

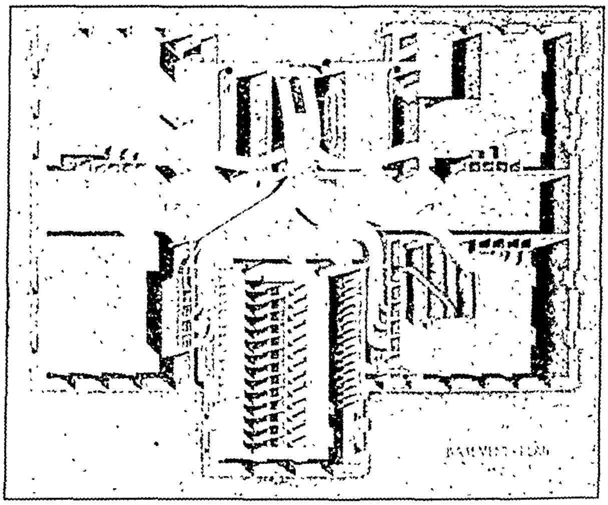

Figure 2.

In passing, I would beg to remind you that the amount of carbonic acid present in the atmosphere may be readily ascertained to a sufficiently close degree for practical purposes in the following manner: Six clean, dry and well-stoppered bottles of a capacity, respectively, of 100, 200, 250, 300, 350 and 400 c.c., a glass tube containing exactly 15 c.c. to a given mark and a bottle of perfectly clear, fresh lime water constitute the apparatus required. The bottles should be filled by means of a hand ball syringe with the atmosphere to be examined. Add to the smallest bottle 15 c.c. of the lime water, put in the cork and shake well. If turbidity appears, the amount of CO_2 will be at least 16 parts in 10,000. If no turbidity appears treat the bottle of 200 c.c. in the same manner. Turbidity in this would indicate 12 parts in 10,000. In similar manner turbidity in the 250 c.c. bottle indicates at least 10 parts in 10,000; in the 300 c.c., 8 parts; in the 350, 7 parts, and in the 400, less than 6 parts.

Taking this minimum of 3,000 cubic feet of fresh air per hour per bed and applying it to a 36-bed ward of a hospital we will find that we will need to pass through the ward 108,000 feet of air every hour and 2,592,000 every twenty-four hours. Now, as to the cost of this. The engineer quoted above says: "With coal at $5 a ton of 2,000 pounds (a fair average for the whole United States), it will require 20 cents per hour for fuel to maintain the warmth of every one million cubic feet of air passed through a building, taking one day with another throughout the winter. In the case of hospitals in which the heating is to be maintained day and night, say, through 180 days of a year, the fuel for the same time will be $864 for every 1,000,000 cubic feet of air passed in an hour throughout the season. This, of course, does not include interest on the plant, labor, service, etc., which increases it to about $2,000 per season per million cubic feet of fresh air passed into the building every hour. As the plant grows larger this can be reduced to probably $1,500 per year for each additional million cubic feet of air admitted per hour. This estimate will be considerably modified in the case of schools, as, of course, schools are not run continually. The fuel cost per hour, however, will remain about the same (20 cents for each million cubic feet of air passed through the building). An eight-room school will require about 1,000,000 cubic feet per hour during sessions, for all purposes, increasing at about the ratio of 100,000 cubic feet of air per room as the school building becomes larger.

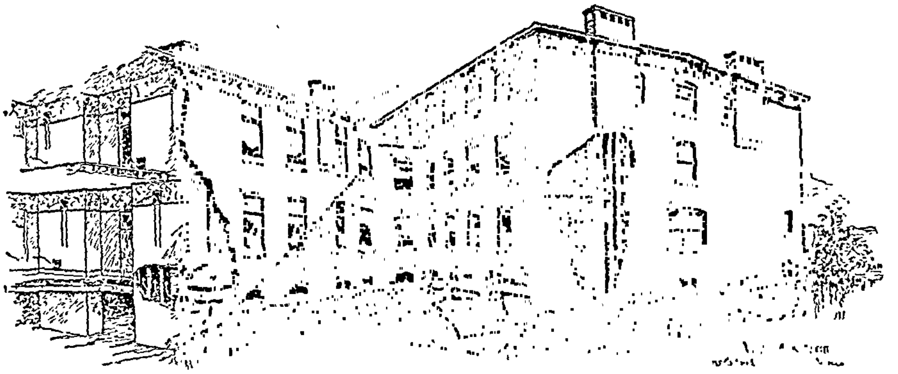

Figure 3.*

For the purpose of ready comparison of the hospital and school-house problem, I might say that the school room as now designed is about 24 by 32 feet and intended for the accommodation of from 40 to 50 pupils. You will see, therefore, that under what is known as the Massachusetts standard, which provides for the admission of 1,800 cubic feet of air per hour per child in the schools (without regard to weight), the amount of air necessary for admission to the average school room per hour should be about 100,000 feet. The Massachusetts standard was formerly much higher than this, but it was found that to make all the existing buildings comply with the proper standard would necessitate the practical reconstruction of every building devoted to school purposes in the state, so that the commonwealth had to make a compromise between its conscience and its pocket book, reduce its requirements and impose only such conditions as what is known as a "reasonable economy" would allow. As we build in the future let us be more generous both with money and air space.

It is hardly necessary to argue to this body of surgeons that generous ventilation of hospitals is necessary—in fact, indispensable—but such a striking illustration of this fact has lately come to my attention, confirming previous experiences of my own both in my own hospital and in the Municipal Hospital of Cincinnati, that I can not forbear to mention it to you. Dr. E. C. Rosenow[1] made an exhaustive and painstaking report on "Streptococci in Air of Hospital Operating Rooms and Wards During an Epidemic of Tonsillitis," and by microscopic examinations and culture experiments by the method of exposed plates demonstrated the existence of the same organisms in the tonsils of those attacked by the angina in the air of the wards and operating rooms and in the infected peritoneal cavities of women who had been subjected to laparotomy during the progress of the epidemic. Dr. Rosenow's paper is well worth the careful perusual of all of us who work in or have to do with the construction and management of hospitals. Broadly speaking, there are two principal methods of ventilation in use in hospitals and schools. One of these is the aspiration system, in which the vitiated air is sucked out of the building through vents which are warmed sufficiently to create a draught out of each room or ward through them, the aspirated air being replaced in the building by fresh air which is brought in through ducts and warmed or not by steam or hot water radiators, as may be required by the season.

The other system is that of the "blower" or "forced draught" system, which is divided into the "exhaust method," where a fan is employed to exhaust the air from the building, and the "plenum method," where a fan is employed to drive the air into the building. It will be observed that the principles of the "exhaust method" and of the "aspiration system" are the same, except that the means for aspirating the air from the building are in one case thermal and in the other mechanical.

We will, therefore, take up first a system that is now being installed in a very large number of our schools, libraries, churches, factories, and theaters throughout the country, observe with some minuteness its method, and then consider the theoretical and practical objections to its use. The name of the system, "plenum"—meaning full—implies that the air of the ventilated building is to be kept somewhat under pressure—that the air is to be forced through. A large open window or air intake is left in the wall of the building, the fresh air enters here, is caught by the fan, which is the mechanical factor of the "draught" system, and is blown across a system of heaters and water pans (Fig. 1) and thence into a system of flues or heaters which carry this warmed and moistened air to the various rooms of the

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* Fig. 3.—Waltham Hospital, showing shafts in the walls and heaters and vents in the wards. "The wing on the right in the illustration is divided into numerous small wards and nurses' rooms so that the method of distribution becomes similar to that provided for an office building or dwelling. Owing to the fact that the building is of so-called mill construction with no heavy internal partition walls, it was necessary to supply practically all of the fresh air and to remove the foul air through flues built into the exterior brick walls. The general arrangement of these flues on one end of the building is indicated. In the other wing are located two wards, one on either floor, and both of considerable size. These are heated from overhead outlets, as indicated. The air is forced toward the end of the room farthest from these outlets, being generally diffused in its passage and finally escaping through registers at floor level and nearly beneath the supply openings. In more complicated arrangements, and particularly in contagious wards, the system may be arranged to furnish practically every bed with an independent supply."

[1] American Journal of Obstetrics, December, 1904.

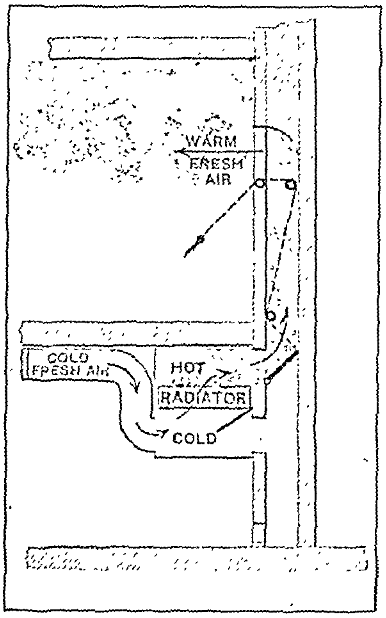

Figure 4.

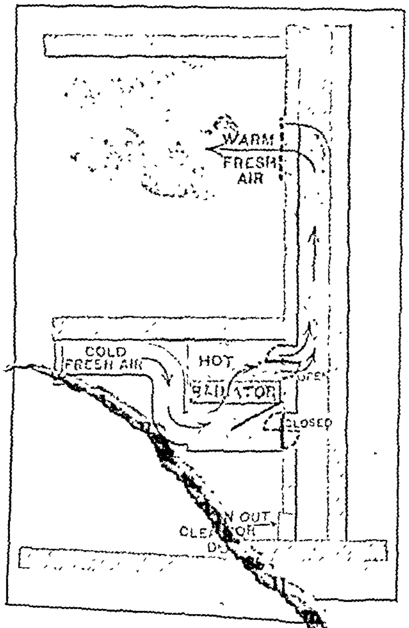

Figure 5.

building (Fig. 2), entering them through the openings in the walls about 8 *feet above the floor*. From thence it is taken, still under pressure (for the doors and windows are all kept shut), into vents or foul-air shafts which conduct the vitiated air from the room at the floor level (Fig. 3). This is the reason why this system *is frequently* known as the "down draught" system—because the *air enters the* rooms at a comparatively [illegible] *level and leaves* at a low level, the draught being, therefore, down.

The varying exposures of the rooms of a school or other building similarly occupied require that more heat shall be supplied to some than to others. With a constant and equal volume of air supply to each room, it is evident that its temperature must be directly proportional to the cooling influences within and around the room, and that no building of this character is properly heated and ventilated where the temperature can not be varied without affecting the air supply. To this end, air of a given temperature may be conducted to the base of each flue and there tempered to a degree suitable to the requirements of the room supplied. The air is heated to the maximum required to maintain the desired temperature in the most exposed rooms, while variety in temperature of air supplied to the other rooms is secured by mixing with the hot air a sufficient volume of cold air at the bases of the respective flues. Here is placed a mixing damper—so designed as to admit either a full volume of hot air, a full volume of cold air or to mix them in any desired proportion without affecting the resulting total volume delivered to the room—the damper should be operated by a thermostat in the room with which the flue connects.

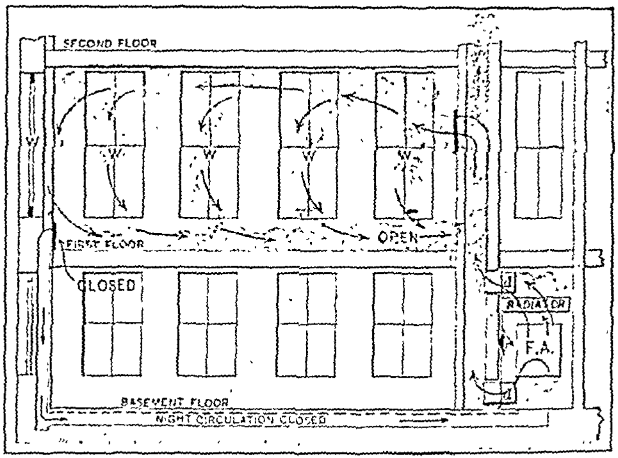

Figure 6.

Being familiar now with the mechanical arrangements of this system, you will readily comprehend the theory of its working. The warm air, as it leaves the register is supposed to rise to the ceiling, expand, and flow out under it, strike the windows on the sides of the room, cool and sink to the floor, and then, under the pressure of the incoming air to return along the floor to the outlet on the same side of the room as the register. In this estimate of the movement of the air, it is held that each child in the school room and each patient in the hospital ward is also a factor in setting up air currents which rise from about the warm body and from the warm lungs to the ceiling, spread to the walls with their contained windows, become cooled at the cool window panes, and sink to the floor to be withdrawn through the vents. One engineer who is evidently a warm advocate of this system says in discussing this point in connection with school rooms: "It may be said that the child is breathing the floor air which is passed to the ceiling over its body, and this is to a great extent true; but it is utterly impracticable to bring fresh air directly to the lungs of each child in a crowded room and therefore all that can be done is to secure a dilution or standard of purity which is reasonably good." (Figs. 7, 8 and 9.) It may be said in conclusion of this part of our subject that those who most favor this system say that the whole matter can not be better expressed than in the words of the late Robert Briggs of the American Society of Civil Engineers in an address on the superiority of forced ventilation:

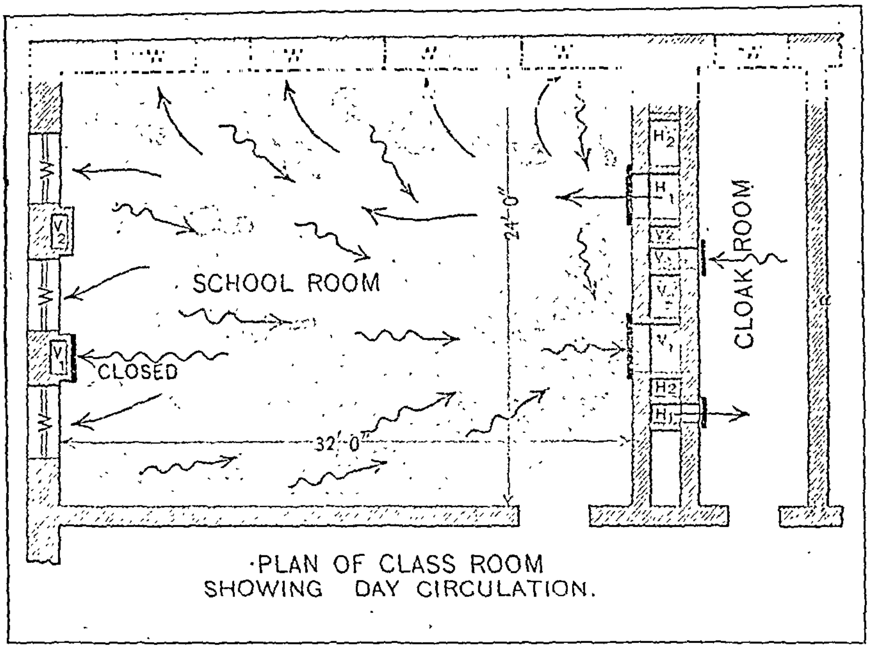

Figure 7.

> This mooted question will be found to have been discussed, argued and combated *on all sides in numerous publications*, but the conclusion of all is that if air is wanted in any particular place, at any particular time, it must be put there, not allowed to go. Other methods will give results at certain times or seasons or under certain conditions. One method will work perfectly with certain differences of internal and external temperatures, while another method succeeds only when other differences exist. One method reaches to relative success whenever a wind can render a cowl efficient. Another method remains perfect as a system, if no malicious person opens a door or window. No other method than that of impelling air by direct means with a fan is equally independent of accidental natural conditions, equally efficient for a desired result or equally controllable to suit the demands of those who are ventilated.

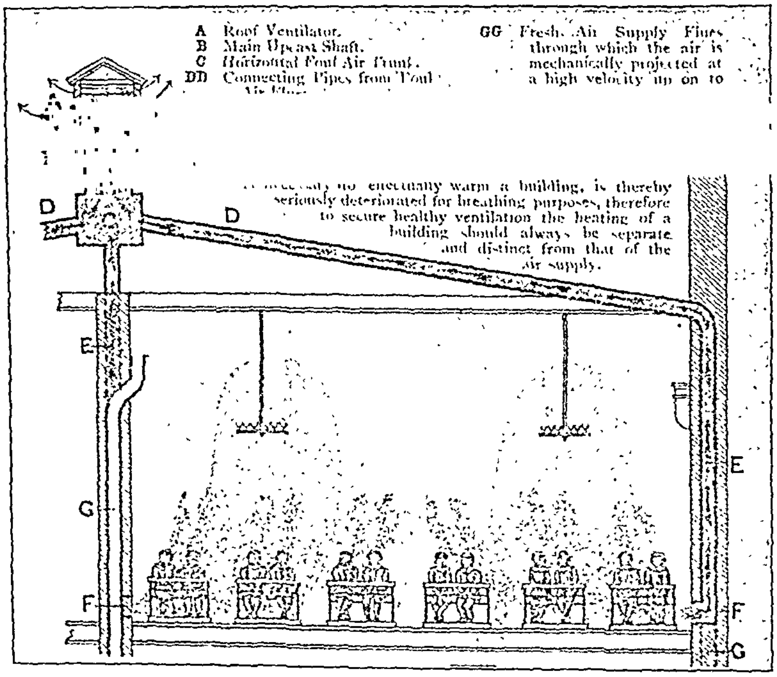
A Roof Ventilator.
B Main Upcast Shaft.
C Horizontal Foul Air Trunk.
DD Connecting Pipes from Foul Air Flues.
GG Fresh Air Supply Flues through which the air is mechanically projected at a high velocity up on to
effectually warm a building, is thereby seriously deteriorated for breathing purposes, therefore to secure healthy ventilation the heating of a building should always be separate and distinct from that of the air supply.
D
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Figure 8.

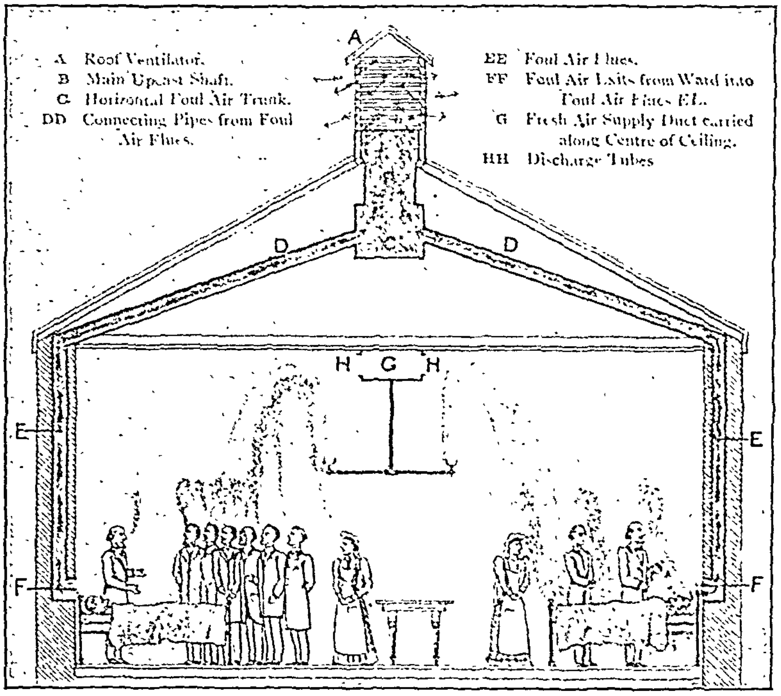
Having now examined the plenum or down draught system, let us consider some of the theoretical objections to its use and endeavor, if we can, to see how it has worked in practice in the types of building that are the subject of our study.

The most elaborate report that I have been able to find on the subject is that of the Woodbridge Commission on the ventilation of the Capitol at Washington. Among other things they say:

> The relative merit of the upward versus the downward systems of ventilation may be estimated from the following considerations:
>
> 1. The direction of the currents of air from the human body is, under ordinary conditions, upward, owing to the heat of the body. This current is an assistance to upward and an obstacle to downward ventilation.
>
> 2. The heat from all gas flames used for lighting tends to assist upward ventilation, but elaborate arrangements must be made to prevent contamination of the air by the lights if the downward method be adopted.
>
> 3. In large rooms an enormous quantity of air must be introduced in the downward method if the occupants are to breathe pure fresh air, or about three times the amount which is found to give satisfactory results with the upward method. (Figs. 10 and 11.)
>
> 4. In halls arranged with galleries the difficulty of so arranging downward currents that, on the one hand, the air rendered impure in the galleries shall not contaminate that which is descending to supply that main floor below, and on the other hand, the supply for the floor shall not be drawn aside to the galleries, is so great that it is almost an impossibility to effect it.
>
> Perfect ventilation can not be obtained, for this would only provide for the dilution of the impure air, while in perfect ventilation the impurities are not so diluted, but completely removed as fast as formed, so that no man can inspire any air which has shortly before been in his own lungs or in those of his neighbor. For these and other reasons the board thinks that the upward method should be preferred.

The argument that because carbonic acid gas is 52 per cent. heavier than air it is therefore desirable to ventilate by a downward current in a room, rather than an upward one can not be considered a valid one for the very apt reason that Woodbridge gives:

The carbonic acid gas yielded by respiration from the lungs and transpiration through the skin is as thoroughly diffused in the warm air currents rising from the body as is the same gas made by a candle or gas flame in the air currents ascending from those flames. That gas when once diffused in air can, because heavier than air, no more settle downward out of the air and occupy the lower stratum of a room, than the salt, because heavier than water, can settle out of the sea to its bottom. Carbonic acid tests made of the air in two theaters and a music hall in Boston with upward ventilation clearly show air of remarkable pur- transition from that purity to impurity at a ity at the floor or breathing plane and a quick plane at the balcony level, and a further vitiation at the gallery level.


A
A Roof Ventilator.
B Main Upcast Shaft.
C Horizontal Foul Air Trunk.
DD Connecting Pipes from Foul Air Flues.
EE Foul Air Flues.
FF Foul Air Exits from Ward into Foul Air Flues EE.
G Fresh Air Supply Duct carried along Centre of Ceiling.
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In case of a crowded theater, samples of air taken near the close of a performance showed the proportion of CO_2 at the floor to average about 4.7 to 10,000; in the balcony, 7.8 to 10,000, and in the gallery, 9.9 to 11 to 10,000; the outside air gave 4.4 to 10,000.

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The air breathed by floor occupants *must, therefore,* necessarily be that of the ascending currents of vitiated air reversed by and diluted in the descending mass of *air used in the downward movement.* The inferior quality of air in downward ventilation can be made good only by considerably increasing the air supply, which is done, according to R. H. Smith, by supplying per hour between 30 and 200 times as much air as is actually inhaled by the inmates of the room.

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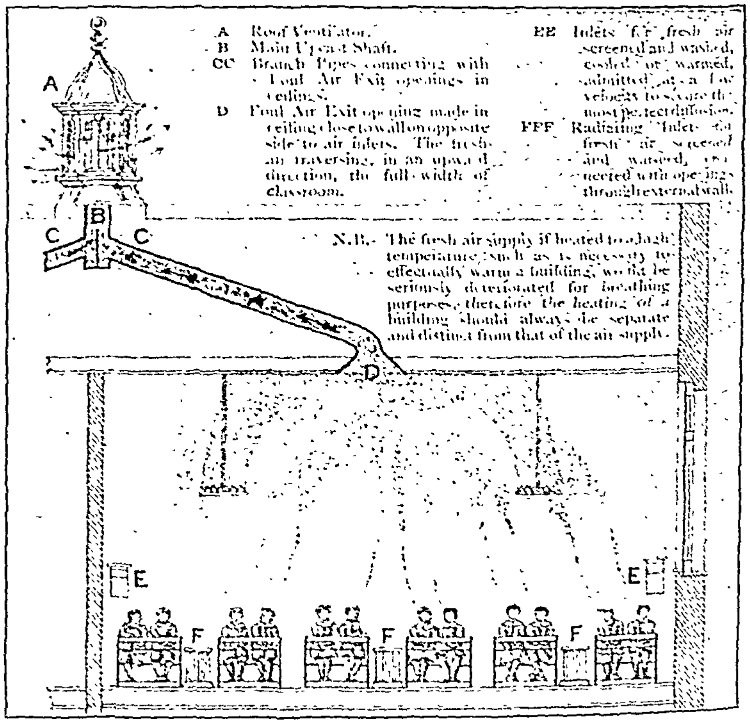
So much for the theoretical objections to the "forced draught" or "down draught" system. I have observed in my reading on the forced draught system that not only it is sometimes necessary to supplement its heating powers by the addition of a direct radiation system, but one of its advocates, in discussing the fresh air supply, makes the following admission: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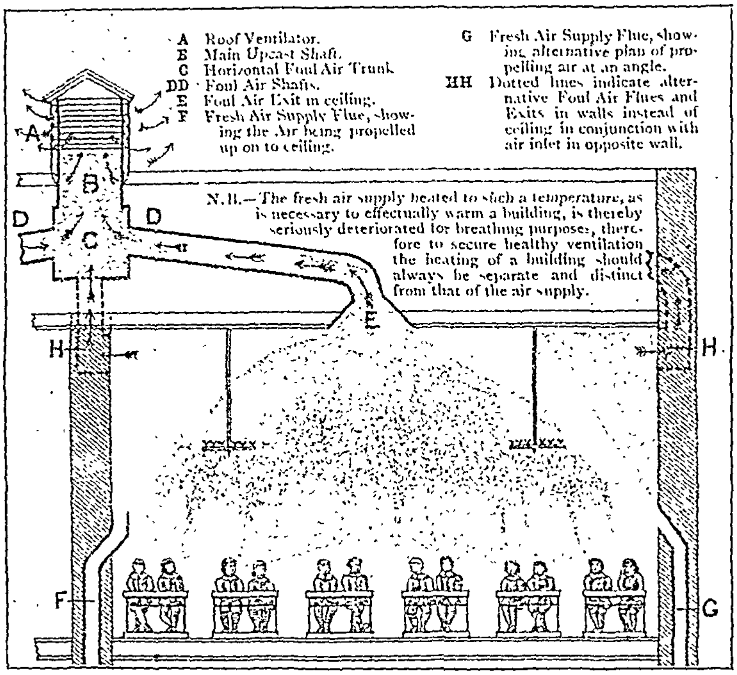
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Figure 11.

The Houses of Parliament in Berlin were also originally equipped with the down draught system, but the sanitary engineer in charge of the work, being doubtful of the efficiency of the method, planned and provided for an up draught system also. After a practical trial of the down draught system it was considered eminently unsatisfactory for heating and ventilating the parliament chamber, so the up draught system already installed was brought into use, and at present it seems that the down draught system is used for one hour before the assembling of the members at the parliamentary sessions for a preliminary warming of the chamber, and the up draught system is used during the sittings to preserve the freshness of the air and to maintain a satisfactory temperature while the chamber is occupied by members and spectators.

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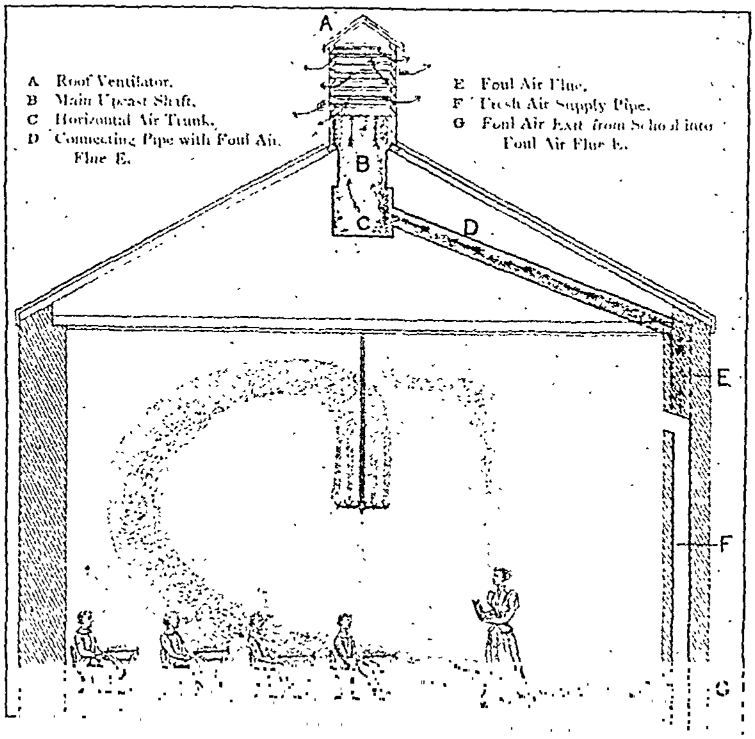
> The proper position of the foul air registers depends on the purpose of the room and on the season. *In large assembly* halls and especially where it is desired to provide for respiration, air as pure as possible instead of foul air diluted to a certain standard, the discharge openings should be above. . . . When we come to deal with rooms having a large floor area in proportion to the height and containing fifty or more persons whose heat production is a factor that must be taken into consideration, there is some danger that in the down draught method there will be an unsatisfactory distribution of the fresh air when the temperature of the external air is *not* below 50 degrees F.

If we do not use the down draught system—if we do not use a fan either for the impulsions of fresh air into a building or the extraction of foul air from it there are but two methods left that we can choose from. One is to bring the cold air into the building through a short duct—allow the air to be heated at a radiator and then to allow it to pass off through an up-cast shaft through



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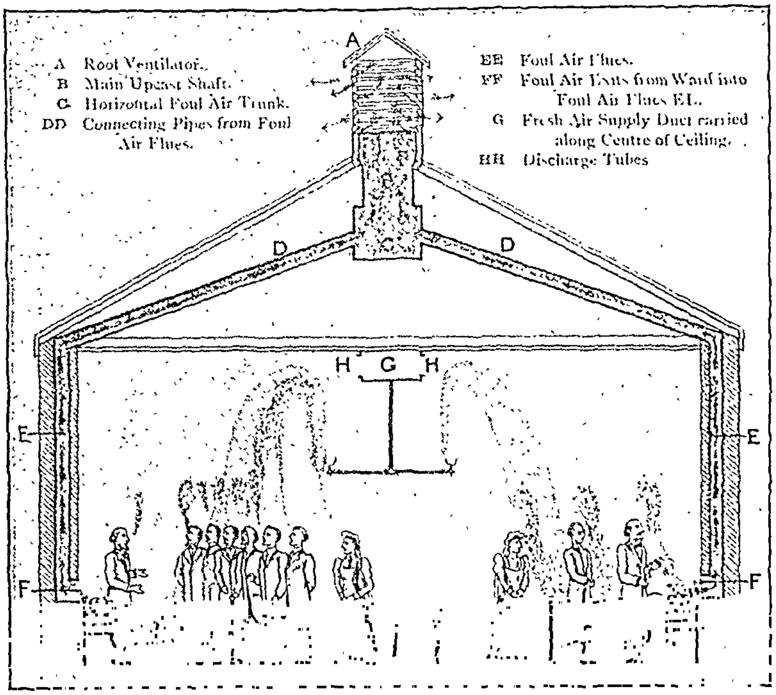
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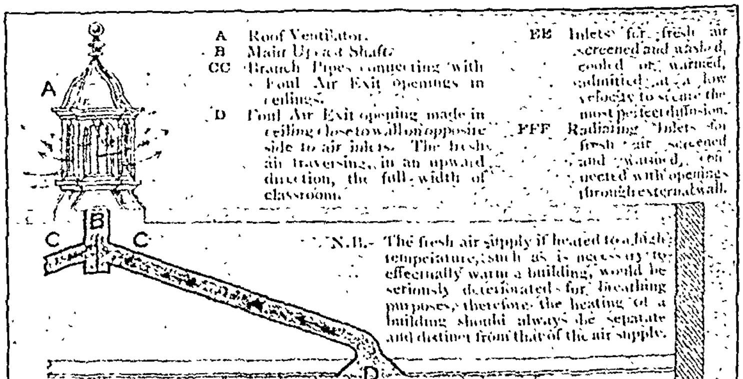
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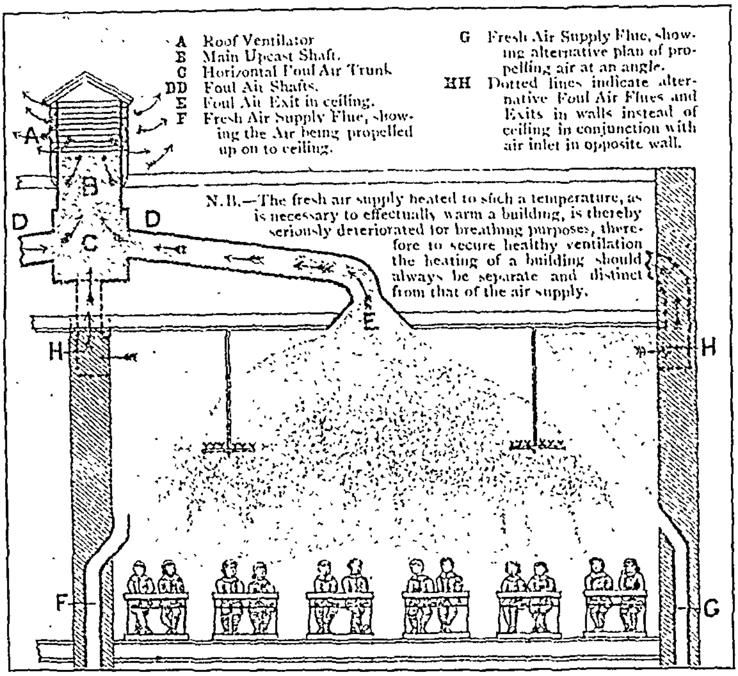
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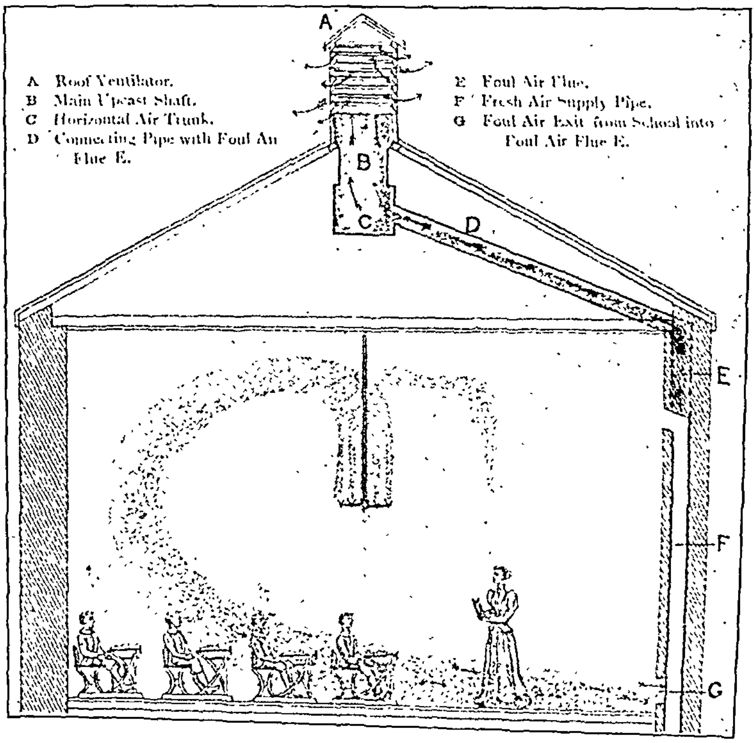
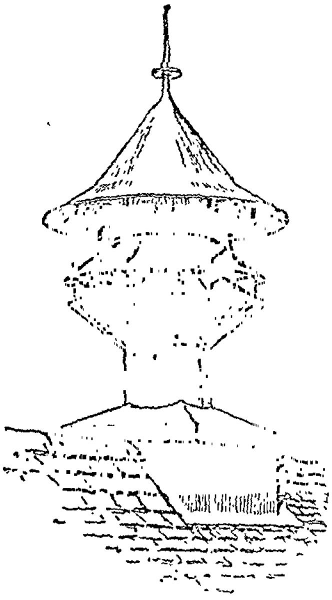


Figure 12.

or near the ceiling. It is held that it is frequently necessary to aid the extraction of the vitiated air by placing small radiators in the extracting shafts so that the air in these shafts shall be heated and thereby acquire an upward movement. It is pointed out that this is a waste of heat, for the radiated heat subserves no other purpose than that of warming the air in the shaft and is an expensive motive power. This may be admitted, but is probably balanced by the necessary overheating of the very much larger quantities of air required to be delivered by the plenum system. In many structures these vents can be run to the smoke stack from the fire boxes of the boilers and will there be heated sufficiently to maintain a good up draught. One of the most reasonable methods that I am acquainted with is that of an English engineer who has planned what he calls a natural method of ventilation, although this term is usually applied to ventilation by means of doors and windows, which the sanitarians consider as no ventilation at all. In this Boyle system the heating and ventilating systems are independent. Radiant heat is used. Boyle's summary description of and rehearsal of the advantages of his system is as follows: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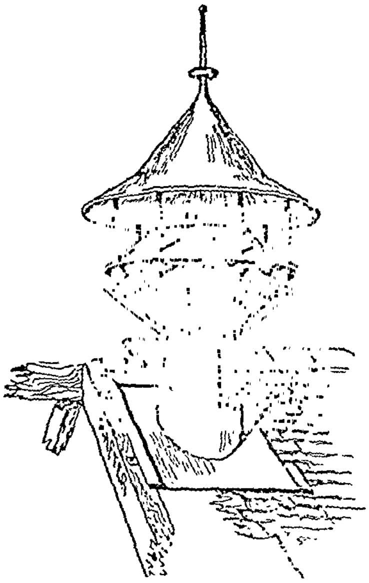


Figure 14.

> Natural ventilation properly applied is the most constant and reliable. It requires little or no attention, is always in action and can not get out of order or break down, as so often happens in mechanical ventilation. Care should be taken in the employment of ventilators that they are of correct construction and that both the outlet and inlets are sufficient in size and number and so placed as effectively to accomplish the work they have to do.
>
> The outlet ventilators should be fixed on the highest part of the roof, clear of all obstructions, so that the wind can reach them freely from every quarter. (Figs. 13 and 14.) The fresh air supply should be properly proportioned to the extraction. The combined area of the inlets should in all ordinary cases be at least equal to that of the outlet shaft. Main exhaust shafts should be at least of equal area to the combined area of the branch pipes. Branch pipes should have as great an upward angle as possible and should never enter the main shaft at the same level unless when parallel. All pipes should be made of metal and circular in shape to reduce friction. The vitiated air should be extracted at the ceiling, to where it naturally ascends. The fresh air should be admitted directly through the walls at a low velocity in an upward direction through a number of small inlet brackets or tubes distributed around the walls to secure more complete diffusion and an equable movement of the air in all parts of the building. (Figs. 15 and 16.) Air never should be admitted in cold weather in a horizontal direction, as a dis-

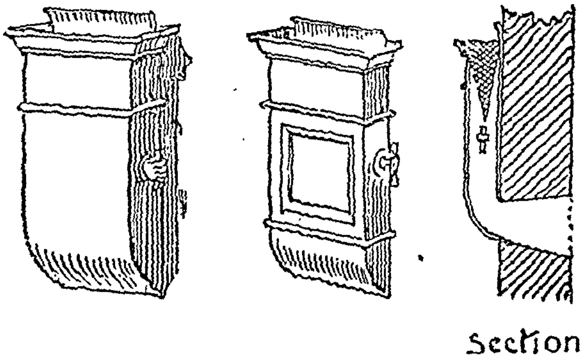
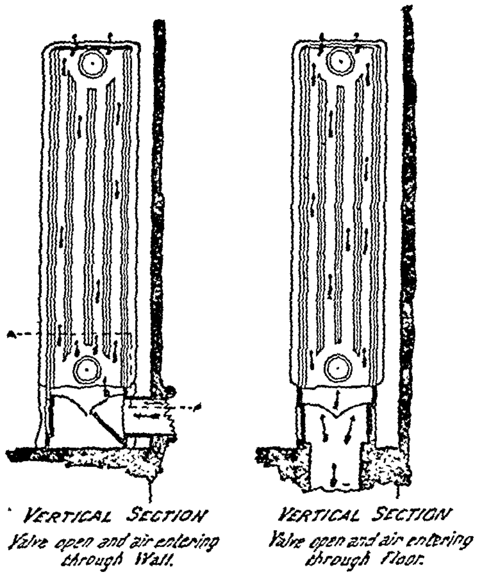


Figure 15.


Vertical Section
Valve open and air entering through Wall.
Vertical Section
Valve open and air entering through Floor.
Figure 16.

agreeable draught would result. The velocity of the air supply should not exceed two feet per second. The inlet channels should communicate directly with the outer air, be as short as possible and easy of access for the purpose of cleaning. Long inlet channels are objectionable, as they harbor dirt and are difficult of access. Where simple tubes or brackets are used the tops should be about 5 feet 9 inches above the floor. Where the air supply is warmed it may be delivered at a lower level (that is where it passes through radiators in entering the room). The inlets should be fitted with regulating valves to control the air supply. The fresh air supply should not be overheated, as its hygienic properties are thereby seriously impaired. Heating a building by hot air should, therefore, be avoided, as injurious to health. Radiant heat is the healthiest and most effective. Where open fires are used, they should have a separate air supply, led directly to them from the outside air through a 3 or 4 inch pipe to prevent them drawing the hot vitiated air from above down into the breathing air, creating draughts and unduly affecting the ventilating arrangements. Figures 17 and 18 well illustrate the principle of this system.

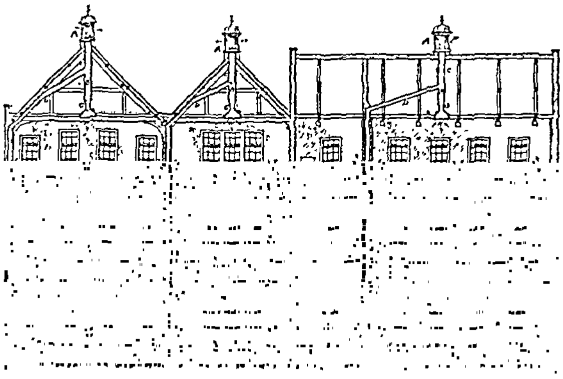


Figure 17.

Sanitarians and intelligent educators everywhere are clamoring for the proper and systematic medical inspection of school children and it behooves us whose province is the eye heartily to second their efforts and to urge on the tardy school authorities the paramount importance of this work not only in the preservation of the general health of the scholars but also in the interest of their eyes.

I need not remind you of the value of the work of Cohn of Breslau, Williams and Ayres of Cincinnati, Agnew of New York, Derby of Boston and Risley and his associates of Philadelphia, in working up the subject of the production of myopia in school children by the ill-lighting of school rooms and the congenital anomalies of refraction in children whose vision has not been corrected on account of the neglect or ignorance of parents or teachers. We have already gathered together sufficient facts on this subject to justify a vigorous demand for the expert examination of the eyes of all school children as soon as they reach an age when they can be intelligently examined. We must not lose sight of the fact, however, that momentous as the subject of progressive myopia is, there are other conditions of the eyes that just as earnestly demand our attention. In a recent most excellent address on school sanitation, Dr. F. G. Byles of Denver tells us:

> In ten months' inspection of Philadelphia schools 3,446 cases of infectious diseases were found. During the first five months of school inspection in Newark, N. J., in less than 6,000 pupils, more than 1,700 cases of infection were found. In Chicago, in four months, 1,417 cases of diphtheria and 306 cases of scarlet fever were found in the school rooms. . . . The inspectors in Chicago schools in five months of 1900 found 670 children with chickenpox, 55 with whooping cough and 648 with measles attending school.

To the members of this Section the infectious diseases, such as diphtheria, scarlet fever, measles and whooping cough, have each their own ocular significance in paralyzed muscles, conjunctivitis, keratitis, iritis and inflammations, and the serious results that we have seen follow the course of the acute infections should be communicated to the authorities as an additional argument of the greatest weight for the prompt establishment of medical inspection in all schools where it is not now in force. Any poison is virulent or harmless in proportion to its concentration or dilution. The air of school houses is necessarily vitiated by the exhalations from the lungs and bodies of the children. Add to it, in addition, the germs of infectious diseases, as we have just seen is so often done, and we can appreciate how vitally important it is that the ventilation of school houses should be as perfect as possible.

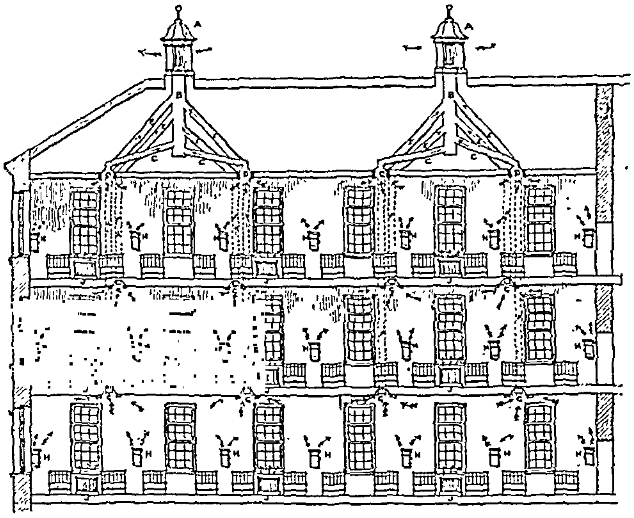


Figure 18.

The relation of the proper lighting and ventilation of school houses to the health of our children is so intimate, and we already know so well what should be and what should not be, that it is our duty to the commonwealth to insist that expert advice should always govern in the erection of a school building, and we must not cease in our demand for what is right until we have a competent medical inspector at every school house at the assembly hour to send the ailing children to their homes and to protect the healthy children in the school house.

In conclusion, I will read a very much condensed summary of the methods of heating and ventilating found in various Eastern hospitals and public buildings and noted by the architect of our new Cincinnati General Hospital during a recent trip that our commission took to Washington, Baltimore, Philadelphia, New York, Boston, Buffalo and Cleveland:

WASHINGTON.

Congressional Library.—Hot-water heating. Partly direct and partly indirect. Independent hot-water heaters under each wing. Small fans used in summer only to force fresh air into the various reading rooms. No fans used in heating. Ventilation by aspirating shafts.

Garfield Hospital.—Old building, direct steam; new building, indirect steam. No fan.

BALTIMORE.

Johns Hopkins Hospital.—Hot-water heating; gravity system. Indirect in wards; direct in corridors and offices. Ventilation by aspirating shafts.

PHILADELPHIA.

Medico-Chirurgical Hospital.—Hospital wards and clinical amphitheater heated by motor-driven fan through indirect steam coils. Offices, corridors, etc., direct steam.

Hahnemann Hospital.—Direct steam heat; indirect in new amphitheater. No fan.

Pennsylvania Hospital.—Central building heated by hot-blast fan system; wards, indirect steam without fan; corridors, etc., direct steam.

University of Pennsylvania.—Laboratories (new), corridors, offices, etc., direct steam. Laboratories, operating room, etc., have hot-blast fans and eduction fans; latter not in use. Medical department, direct steam.

New Municipal Hospital for Contagious Diseases.—Indirect steam from central plant. No fans.

NEW YORK.

Presbyterian Hospital.—Heated with indirect steam coils operated by fan. The superintendent, Dr. Fisher, does not approve of system.

Mt. Sinai Hospital.—Equipped with hot-blast system and eduction fans on roof. Also direct steam heaters under all windows in wards and corridors. Fan system not used. When visited by committee ventilation was effected by opening the windows.

Lying-in Hospital.—Fan system—one set to blow in and one set to draw out. Also some direct radiation in each room. Blowing fans not used. Eduction fans only in use. This saves $3,000 per year.

New York Hospital.—Fan system, blowing tempered air through indirect coils. In use all the time.

St. Luke's Hospital.—Heating, direct steam. Exhaust fans used for ventilation; in use part of the time.

BOSTON.

Massachusetts General Hospital.—Old buildings, indirect steam; no fans. New buildings, double fan system, one to blow in and one to draw out; both in use.

Boston City Hospital.—A mixed system; partly direct steam and partly indirect steam, with aspirating coils. Surgical building, fan system.

BUFFALO.

General Hospital.—Hot-blast fan system; objected to; hard to work. No thermostatic control. No exhaust fans. Ventilating flues through roof.

CLEVELAND.

Lakeside Hospital.—Fan system through individual stacks. Bottom heat inlets (a mistake). Bottom vents carried down through basement to hot stack.

Original Articles

FIBROID GROWTHS OF THE ABDOMINAL WALL.*

CHARLES A. POWERS, A.M., M.D.
Professor of Surgery in the University of Denver.
DENVER.

The comparative rarity of these so-called desmoid tumors may be seen by referring to very recent statistics gathered by Cabot[1] of Boston, who found but 3 of this nature in a series of 4,876 abdominal tumors encountered at the Massachusetts General Hospital. Ledderhose in 1890 was at some pains to collect 100 cases. More recently, Pfeiffer[2] cites 40 cases seen in the Tübingen clinic during the past 46 years, and adds to this 360 other cases which he gathered from literature.

The term desmoid, by which these growths have generally been described, originated with Johannes Müller in 1838, and was intended to designate tumors of the musculo-aponeurotic tissues of the abdominal wall (tendon-like neoplasms). My own attention was directed to these rather curious growths by three cases seen, respectively, at the New York Cancer Hospital, St. Luke's Hospital in New York and at the City and County Hospital in Denver. These cases were practically duplicates. Each occurred in a young woman between 25 and 35 years of age who had recently gone through pregnancy. In each the growth was in the region of the right rectus muscle and near the level of the umbilicus. In two the peritoneum was involved and required excision; in the other the peritoneal cavity was not opened. In one the size of the growth is described in my notes as "about the size of a pullet's egg;" in one it was the size of a small orange; in the other, that of a little baby's fist. In each of the three cases the hospital pathologist reported the growth to be a fibroid. Each patient made a prompt operative recovery. In two cases the fate of the patient after leaving the hospital is unknown to me. In the third, a patient operated on in the City and County Hospital in Denver in June, 1904, there has been no relapse as yet.

I have made but brief mention of my own cases, but on examining the literature of the subject I am struck by the fact that most of these growths occur in practically the same way.[3]

Pfeiffer analyzed 400 cases, and his observations are so valuable that I shall quote from them at length and without apology.

No cases are included in the category except those which really began in the muscles and aponeuroses. This excludes tumors beginning in the round ligaments, in the periosteum of the ribs, pelvic bones and vertebræ, and in the ligamentum teres, all of which may present themselves as tumors of the abdominal wall despite their peduncular attachment to the outlying tissues.

Desmoids, unlike sarcomata in the same situation, occur in the great majority of cases in women—the ratio being about 7 to 1.

In regard to the influence of previous pregnancy, Pfeiffer has data in 265 cases, and of this number 250 women, 94.3 per cent., had borne children—usually more than one. The tumor appeared, as a rule, immediately after delivery, and in only 15 is it expressly stated that the woman was pregnant when the growth appeared. Naturally, a majority of women were of child-bearing age; 146 were between 25 and 35, 41 were between 15 and 25, and 35 between 35 and 50. Only 15 women were over 50. In a considerable number the age was not given. A very few women were over 60. Of the few men observed, the common age was between 35 and 50. There are also a few cases recorded in children; some of these were undoubtedly congenital.

Heredity may be disregarded as a causal factor. and the very great majority of the growths were single.

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* Read in the Section on Surgery and Anatomy of the American Medical Association, at the Fifty-sixth Annual Session, July, 1905.

[1] Trans. Assoc. of Amer. Physicians, 1905.

[2] Beit. z. klin. Chir., 1904, vol. xliv, p. 334.

[3] The following are among those who have recently paid attention to the subject: Venot: Jour. de Méd. de Bordeaux, 1903, xxxiii, 417. Abadie: Montpell. Méd., 1903, xvii, 97. Bornemann: Hosp. Tidende, 1903, xl, 759. Sabadini: Bull. Méd. de L'Algerie, 1903, i, 261. Schlokouski: Beit. z. Lehre, von Bauchdeckenfibrom. Diss. Berlin, 1903. Druchert: Echo Med. du Nord, 1903, vii, 512. Silberberg: Bull. et Mem. Soc. Anat. de Paris, 1903, lxxviii, 677. Fredet: Ibid, 712. Havemann: Ueber Tumoren der Bauchdecken., Diss. Halle à Las. 1903. Larass. Ueber Desmoide der Bauchdecken. Diss. Leipzig, 1904. Eitel.: Northwest Lancet, 1904, xxiv, 228. Stein: Monats. f. Geburts. u. Gyn., 1904, xix, 360, and *Pfeiffer.*

Location.—In 185, or 72.5 per cent. of available cases, the growths were below the navel; of these 37.2 per cent. were to the right side, 27 per cent. to the left, and 8.2 per cent. in the middle line (absolute ratio, 51 per cent., 37 per cent. and 12 per cent.).

In that part of the abdominal wall above the umbilicus desmoids occurred much less frequently, in all 41, or 16.1 per cent; 17 on right side, 20 on the left side and 4 in the middle line (ratio, 41 per cent., 49 per cent. and 10 per cent.).

Of the total number 26, or 10.2 per cent., were neither above nor below the navel, but on a level with it—10 to the left and 16 to the right.

Finally, there were 3 in the region of the loins—2 on the right, 1 on the left.

Summary		R.	L.	M.
Above navel	41	17	20	4
Even with navel	26	10	16	0
Below navel	185	95	69	21
Lumbar	3	2	1	0
	255	124	106	25

The point of origin may be a more or less broad pedicle attached to fascia or muscle. Of 268 cases in 115, 43 per cent., the origin was from the rectus muscle. In 13 cases from the anterior and in 34 from the posterior lamina of the fascia, while in the remaining 68 the point of origin is not stated. In 47 cases, 17.5 per cent, the oblique muscles were the origin, in the following order of frequence: Internal oblique, external oblique and transversalis. In 45 cases, 17 per cent., the origin was the abdominal fascia; 10 times from the superficial and 35 times from the deep. In 29 cases the tumor arose from two muscles, and in 29 others so many muscles were involved that the origin could not be determined.

The fact that most of the desmoids arise from the rectus corresponds to their lateral location, and to other points in their localization, such as predominance in the right pubic region.

In form the tumor is usually roundish or rather ovoid. As a rule the long axis of the mass corresponds to that of the course of the muscles and tendons from which it arises. The direction of the growth is usually determined by the resistance encountered. Hence, in primiparæ and in nulliparæ the firmness of the abdominal wall anteriorly prevails over that in the rear. In such cases—relatively few—the tumor grows inward, and has a spheroidal or mushroom shape. When the walls have become lax from child-bearing, however, the tumor grows toward the surface, even when it arises from the posterior sheath of the rectus; showing that the resistance from behind (transversalis fascia, peritoneum and intestines) exceeds that of the abdominal wall in front. The least resistance encountered is in the muscles themselves in their long direction, this favoring the flattened or ovoid shape. When a tendon or muscle sheath is encountered a constriction results and the tumor grows above and below it, producing the so-called cuff-button form. Multiple constriction produces lobular forms, which may simulate multiple tumors.

While the attachment is usually broad, so that the mass lies in its bed like a disc, slender pedicles may occur. Frequently extirpation may be accomplished by shelling the tumor out of its bed. A capsule is usually present, but this becomes atrophic from pressure. It is not involved in the growth of the tumor in the majority of cases, but often when the growth exhibits sarcomatous tendencies a diffuse union of the tumor with the surrounding tissues is found, and extirpation can be effected only by the knife and scissors.

In many cases (especially in those reported from French sources), a connection is mentioned as existing between the desmoid and some osseous structure (false ribs, ilium, pubic bone). This is termed the bone pedicle. Although their existence has been denied, there is good evidence that such secondary bone pedicles sometimes do occur. Olshausen, who has seen such cases, believes that these pedicles may be primary. Such a view would confound desmoids with true tumors which originate from periosteum. In Pfeiffer's 400 cases, no less than 65 (16.25 per cent.) had osseous attachments, 35 with ilium, 8 with pubic bone, 6 with false ribs and 1 with spine. In two cases there was attachment to two bones—ilium and os pubis.

The rate of growth and size of the tumor vary extremely; in many cases several years, even several decades, may show hardly any change; then a sudden and rapid growth may set in. In other cases, the growth may be rapid at first, but when a certain limit has been reached (size of head) the growth may remain stationary for years. Rapid growth does not necessarily mean malignancy. Sometimes tumors are seen which prove fatal when their growth has been slow throughout. One patient who refused operation died in 18 months.

The usual size of a desmoid is from that of a hen's egg to that of a large fist. It is not rare to see them as large as a child's or adult's head. They may attain a weight of 2 or 3 kilos. Very exceptionally great weights have been recorded—up to 10 kilos. Some of the oldest reported cases had weights of 17 kilos, 22 kilos, etc. This may be explained by the fact that these tumors cause relatively little trouble, and hence may have been allowed to grow indefinitely before medical advice was sought.

It has very often been noted that the desmoids were first noted during pregnancy (including puerperium) or else began to grow rapidly at that time, to become stationary again after the childbirth was over. This happened in 99 out of 400 cases (about 25 per cent.) Growths extirpated during pregnancy may recur during a subsequent gestation.

In nulliparæ and in males, trauma is frequently accused as a cause (about 7 per cent. of the entire number).

Pathologically these desmoids are firm, hard masses, usually enveloped in a membrane. They creak when cut, the section being pale-red or whitish-yellow and tendon-like. The presence of escaped and altered blood may color the tumor a brownish hue. The texture, in general, is uniformly hard and firm—bundles of fibers may be seen in a network or sometimes in concentric grouping, dividing the area into nodes. The desmoid is poor in vessels, and hence areas of softening may occur. The edema which precedes it may be of such degree as to simulate fluctuation. These areas of softening often lead to the formation of cysts, and these are sometimes hemorrhagic.

Microscopy shows the bundles of fibers already mentioned closely adherent to the adventitia of the vessels. Where edema occurs, the bundles are pushed apart. More or less proliferating tissue is present—as shown by young connective-tissue corpuscles in the course of transformation into fibrillæ. When this immature tissue is especially abundant and collected into clusters the tissue of a sarcoma, round or spindle cell, may be simulated. This may lead to mistaken diagnosis when a piece of tumor is excised before operation. Some cases thus diagnosed as sarcoma have not relapsed even when extirpation was incomplete; other cases diagnosticated as desmoid have rapidly recurred (the latter mistake is much more infrequent). A microscopic diagnosis in advance of operation can not be made with certainty and does not give any guide to prognosis as to recurrence. The amount of formative tissue present is likewise no criterion of benignancy or malignancy.

The "more or less cellular fibroma" is the most common type of the desmoid, especially in women. Pure sarcoma (round or spindle cell, and oftener the latter) also occurs, especially in men. Other types of sarcoma are rare or absent, save cysto-sarcoma. (It seems to me that all sarcomata should be excluded from this class.) As far as the material is available, 88.2 per cent. of all cases in women were cellular fibromata and 11.8 per cent. sarcomata; in men the two percentages were 75.6 and 24.4.

In only 14 cases, 4.67 per cent., was there a mixture of myxomatous tissue. There was a single case of pure myxoma and no instance of myxosarcoma. Calcification occurred in 4 cases. A doubtful case of suppuration of a desmoid is recorded.

Several authors record the presence of smooth muscle (fibromyoma). Of a number of alleged cases Pfeiffer selects some 5 as genuine. Others may be added, but description is not sufficiently thorough. All cases, real or alleged, are in women, but by no means confined to the round ligament region.

Under etiology some points have already been mentioned. Grätzer has elaborated an embryonal theory (confusion of mesodermic elements, both peritoneum and fibrotendinous portions of the abdominal wall being derived from that layer). Herzog has formulated a traumatic theory, based on the possibility of injury to the rectus muscle, formation of organized hematoma (muscle callus) and eventual tumor formation. This view has been well supported in literature, but can not be made to apply to other muscles when injured.

Sänger has apparently refuted both the preceding theories. Simple homologous tumors do not have an embryonal origin, while desmoids show no evidence of hematomatous origin.

Guinard and other French authors seek to connect all desmoids with the round ligament, as far as women are concerned. Cases in men are placed with sarcomata. This view is opposed by facts already cited.

As far as trauma to muscle is connected with pregnancy, etc., obstetricians are almost universally silent as to such injuries, hematomata, etc. The exception is Stoeckel, who has reported 2 cases of hematoma of the abdominal wall in pregnancy. Not only could he find no other cases in literature, but both his own occurred under peculiar circumstances, viz., severe paroxysms of coughing and with a general hemorrhagic diathesis.

Numerous cases of hematoma of the abdominal wall from trauma have been recorded in man, but none was ever known to cause a desmoid, unless we include certain cases of keloid, which present some resemblance. If desmoids arise from trauma they should be much more common in men. Certain lesions—indurations, hematomata, cysts, keloid—have been known to follow injury to the muscular region, but they follow closely on the latter. Desmoids, on the other hand, differ greatly from such sequelæ.

Ribbert's theory of tumors may be applied to desmoids. This is a modification or expansion of the old Cohnheim theory as applied by Grätzer. As applied by Lücke, it depends on the plasticity and distention of the abdominal wall as a result of pressure of the gravid uterus, thus favoring the proliferation of connective tissue elements by reason of diminished resistance—the best answer to this view is that we do not see desmoids follow distention from ovarian tumors and the like, while the sexual organs proper undergo a degree of softening which might favor proliferation of elements previously held in check. This feature of pregnancy can not be applied to the abdominal walls.

Wischnewsky has recently made exhaustive studies of the distended abdominal wall. He states that in pathologic conditions the muscles atrophy, while in pregnancy they undergo hypertrophy in which the fibrous tissues participate. Durante has made the same observation.

This fact enables us to exclude distention as an efficient cause. The connection of desmoids with pregnancy can not be explained in this way. With a normal hypertrophy of the fibrous structures occurring at this period, the presence of young connective tissue at once suggests a possible factor in the causation of these tumors. The coincident distention and stretching of the abdominal wall could then be invoked as a secondary factor. To produce a truly pathologic state it would still be necessary to call on the misplaced germinal matter dating from the embryonal period.

These three factors, viz., diverted or superfluous embryonal elements, a state of active proliferation of normal fibrous tissue and a stretching or loosening of the parts involved, only apply to pregnancy. In trauma there is not the stretching, but there is an edematous succulence which may produce an analogous result. Individual cases of desmoid following laparotomy scars, the pressure of a belt buckle for a long period, etc., could also be thus explained. A single blow, laceration, etc., may be and often have been alleged as causes. But the formation of a hematoma is not a necessary step.

In regard to symptoms, subjective disturbances are usually absent at first, and women seek operation for cosmetic reasons only.

When the growth reaches the size of an English walnut, pain may appear in various types, local or radiating, worse during the menses or present only at that time. In very nervous women, the presence of the pain may cause great discomfort; rarely convulsions or hallucinations, which disappear with extirpation. When the tumor grows rapidly, attaining a considerable size, patients complain of peculiar painful sensations, due perhaps to compression of nerves or to stretching of skin. Medical aid may now be sought and an erroneous diagnosis of malignancy may be made. Pressure symptoms are usually absent, as is also distress from external contact. Tenderness to pressure is usually absent as well. The skin may or may not be stretched and glossy; with large tumors *striæ atrophicæ* appear. Adhesion with the skin if of rare occurrence; when present it causes redness and edema and even ulceration, phlegmon and sepsis. The most cellular type of fibroma, with relapse of same, almost never involves the lymphatics.

Diagnosis is by no means so easy as might appear. When small and not adherent beneath, diagnosis is easy; no so when opposite conditions exist. Characteristic is the readily mapped out limits, the conformity in direction with the muscles, the degree of mobility—these may be made without narcosis. These desmoids of the rectus are naturally movable from side to side chiefly. Bouchacourt's symptom is of value—the patient sets her abdominal muscles in voluntary contraction by rising from a chair without aid of the arms; during this contraction all mobility of the tumor disappears. If the tumor then becomes more prominent, it is probably derived from the superficial muscular layers; if it becomes less prominent, its origin is from the deeper layers. This maneuver may not succeed if the abdominal wall is either unduly firm or unduly lax. As compared with abdominal tumors of deeper seat, the parietal kind do not change their position with change of posture. Bulging outward is very characteristic of desmoids, this being much more marked than mere palpation would seem to indicate. Unless deep adhesions have formed there is no change of position during respiration.

Diagnosis, however, is often not only difficult, but apparently impossible. A large number of mistakes are on record in which desmoids have been confounded with other conditions—various cysts, tumors of the gall bladder, omental tumors, salpingitis, appendicitis and other intra-abdominal affections. Hence the necessity of differential diagnosis between desmoids and a host of other intra-abdominal conditions. Exploratory incision and exploratory laparotomy may be necessary. Narcosis will exclude hysterical tumors. Vaginal and rectal exploration may be of aid.

Treatment is purely surgical, and the desmoid should be extirpated at once. The surgeon must beware of too radical intervention, as the operation may leave a breach in the abdominal wall which can not be repaired. In pregnancy, extirpation is indicated in the early months, but in the later months operation must be deferred until after delivery; otherwise the operation scar would be likely to rupture. Some authors, however, do not advise waiting.

As even the smallest desmoids, when they arise from the posterior aspect of the rectus, may necessitate a peritoneal resection, such a contingency must be prepared for.

In operating, the incision must be in the direction of the long axis of the tumor. The skin and muscular layers are first divided. If the tumor is encapsulated, not adherent and sharply outlined, it may be removed by blunt dissection. If at any point it appears to have involved the investing tissues, free excision must be made. It is of no use to attempt a blunt separation of the peritoneum, and one should not hesitate to open the abdominal cavity. General narcosis must be employed. Successful cases of imperfect removal must not be allowed to influence the surgeon, for these are rare exceptions. Even when the desmoid can be removed extraperitoneally, it is sometimes wise to resect the peritoneum in order to prevent infection by facilitating drainage. Cases of peritonitis have been reported in which that membrane was not involved in the operation. Under such circumstances two cases have terminated fatally.

Resection of the peritoneum and extirpation of the tumor adherent thereto is, in general, best done as follows: At the edge of the tumor a small incision is made through the membrane and the tumor is excised. Sänger, who lost a case by hemorrhage into the peritoneum, proposed the use of "arcade ligatures" about the tumor which was to be excised.

If such large areas of peritoneum must be removed that the breach can not be closed by primary union, the wound must be made as small as possible by suture, after which the edges are to be stitched to the omentum.

Postoperative hernia is best prevented by separate suture of each plane. If necessary, the opposite muscles may be used for plastic purposes.

If the entire half of the abdominal wall is involved, the skin should be spared in the excision of the tumor; it may be of value in closing the breach if muscle plastic is available. If the flaps left in certain cases are redundant, König's plan may be followed; that is, the skin may be arranged in cock's-comb fashion and the subcutaneous tissues sutured together.

If suture in individual planes has been effected, there is no need of a retentive band. Under other circumstances a bandage must be worn for several weeks after complete healing of the wound.

The immediate results of operations on desmoids of the abdominal wall have been relatively favorable since the introduction of asepsis. Discarding some of the older material Pfeiffer has notes of 285 patients operated on. Of this number the abdominal cavity was opened in 119, 40.8 per cent. The primary mortality in these cases was 10 cases, 3.5 per cent. In 142 cases, 49.8 per cent., extirpation was effected without opening the peritoneum. The mortality here was 3 cases, 1.05 per cent. In 24 cases details as to peritoneum fail. The combined mortality was 4.55 per cent. Of the 13 cases, 7 patients died of collapse or secondary hemorrhage and 6 of peritonitis.

In regard to ultimate results Pfeiffer avails himself of 107 cases, 85 females and 22 males. Relapse occurred in 33, 30.8 per cent.—15 males, 18 females. In 17 cases, relapse was fatal—11 males, 6 females. Hence, relapse occurred in males in 68.1 per cent. and was fatal in 50 per cent. Relapse occurred in females in 21.2 per cent., mortality but 7 per cent.

Late relapse occurred at varying intervals. In no case did it occur in the first 3 years among the women (40 cases studied), but 2 men had relapsed (out of 5 studied) within that period. In the cases of late recurrence studied in women, 3 in all, the interval after operation was 4, 7 and 9 years, respectively. In the 2 cases of early relapse in men, there was a history of repeated relapse; in one the interval was brief, in the other 14 years.

It is but natural to assume that the smaller the growth at the time of extirpation the less will be the liability to recurrence.

DISCUSSION.

Dr. Robert F. Weir, New York, said that this is a rather rare affection, but he has met with it twice and both cases were in young unmarried women between the ages of 30 and 35. The first tumor he thought was an ovarian tumor with very solid contents. He made an incision which revealed the fact that it was not in the abdominal cavity. The adjacent tissues peeled off readily and the mass weighed fourteen pounds. The attachment was along the line of the right linear semilunaris. The patient recovered with a fair condition of the abdominal wall and remained well for several years when she passed from his observation. The younger patient had a little different tumor in the lower right side. It was removed by incision; the attachment was in a similar situation, but it demanded some sacrifice of muscular tissue. Under the microscope it was pronounced to be purely fibrous, but it recurred eight months afterward, when after removal it was pronounced to be a spindle-celled sarcoma. If it had been carefully examined all over by the pathologist it would probably have shown in some parts of the eight pounds that it was a spindle-cell sarcoma. It recurred again, and was again removed when it had recurred, but he refused to do anything further surgically. She was treated by erysipelas toxins by an expert, under which treatment she improved to some extent, but eventually she returned to the hospital and died from the tumor. This case shows that these large masses are at times malignant. In the second procedure help was derived by liberating the peritoneum from the adjacent extraperitoneal tissues. In this way adhesions were avoided.

Dr. Emmet Rixford, San Francisco, mentioned a similar case occurring in a young woman of 27 who had been pregnant some time before the tumor was discovered. The tumor grew slowly but continuously and when operated on it measured 4x8 inches. It was somewhat the shape of a modern football, was smooth in outline and situated in the anterior abdominal wall at the outer edge of the left rectus muscle. The operation was simple. The growth, which was situated in the internal oblique muscle, was simply shelled out. The peritoneum was not opened. The muscles were drawn together with chromicized cat-gut and wound closed. Although the operation was done some ten years ago and the patient has since been through two childbirths there has been no recurrence of the tumor and no hernia. The tumor was diagnosticated as sarcoma but it was definitely a desmoid, although the pathologist was unable positively to exclude malignancy because some of the areas in the tumor were evidently sarcomatous while other areas were apparently of simple fibrous tissue.

Dr. Alexius A. McGlannon, Baltimore, stated that recently he had a similar tumor for three years. After operation the patient was free from the growth for fifteen months and then it recurred and was again removed. The first tumor was a soft fibroma, while the second showed all the varieties of malignant connective tissue tumors. It was lobulated, some lobules showing fibro-spindle-cells sarcoma, and some mixed spindle and round cells. The second operation was only done in May, so that Dr. McGlannon does not know the results. The fact that the tumor became more prominent after contraction of the abdominal muscles was considered important, indicating a superficial position; but the tumor involved the entire thickness of the wall from subcutaneous fascia to peritoneum, and became prominent when the muscles were contracted because of intra-abdominal pressure.

Dr. J. P. Connell, Fond du Lac, Wisconsin, reported two cases, one of which was a tumor of the rectus muscle, the size of an egg, which has not recurred. The second case occurred six months ago, and the tumor extended from the erector spinæ almost around to the ribs. He took a section of the growth and the pathologist reported a fibroma; he then advised removal. He dissected the growth out from the rectus muscle, a great deal of which was involved, as were several other abdominal muscles. The attachment extended to the periosteum of the ribs and in operation he removed a section of several of them. The patient made a good recovery. In his dissection he made a large flap and after turning out the growth stitched the flap back into place.

Dr. O. O. Witherbee, Los Angeles, reported a case involving the left rectus muscle following an operation for salpingitis. The microscope gave a spindle-cell appearance but not exactly of the sarcomatous type. To have removed it would have left the patient without any abdominal wall, and he therefore advised using the Coley fluid. The patient had been reduced in weight to 85 pounds when beginning the serum, so that the prognosis was most unfavorable. He used the serum under protest, but it looked like a last resort. At first it was used every other day, in sufficient quantity to produce a reaction; in a few weeks it was used every third day, and later every fourth day, until after six months it was used only once a week. The patient now weighs 120 pounds, and there is only just a suspicion of the tumor left.

Dr. Jacob A. Fulton, Astoria, reported a case of fibroid tumor of the abdominal wall on which he operated 16 years ago. At that time he considered it a rare disease for he found few reported cases. In its removal a portion of the peritoneum about the size of a dollar was removed and although the patient had secretly eaten a large number of dried prunes before the operation, and vomited prunes in large quantities, the operation was successful and no hernia followed. There has been no return of the disease.

Dr. L. L. McArthur, Chicago, mentioned one case of this type which well illustrates the difficulties of diagnosis. The growth was so mobile that it was transferred from the gynecologic to the surgical department of the hospital. On opening the abdomen Dr. McArthur found a tumor with a broad, flat ribbon-like base extending from nearly the umbilicus to the symphysis. He thought that he had to deal with a long pedunculated uterine fibroid. The interne, in his bi-manual manipulation, had been able to detect that when the tumor was pushed down the abdominal wall was also dragged down, especially under the right rectus.

Dr. Maurice H. Richardson, Boston, stated that Dr. Willoughby's reference to Coley's treatment brought to his mind an inoperable case of fibrosarcoma of the abdominal wall so successfully treated that a hernia developed in the scar of exploration through a space occupied originally by six or eight inches of dense tumor. Dr. Richardson has seen several cases of fibroid tumors of the abdominal wall. Whether they were of the desmoid variety or not, he cannot say. The practical point in the treatment of any neoplasm extensively involving the abdominal wall is the closure of the gap left by its removal. He has recently succeeded in filling in the gap left after removing the muscles of the left lower quadrant, which, with a portion of the os pubis, had been involved in the fibrosarcoma of great extent. The muscular belly of the tensor vaginæ femoris, with the fascia lata, was reflected from the thigh and sutured to the edges of the gap, as shown by these blackboard drawings. A firm and serviceable abdominal wall has resulted.

Dr. Charles A. Powers stated that it is difficult to distinguish between certain types of fibromata and sarcomata, and that the best that can be done is to get a reliable pathologist's report on the tumor. Dr. Powers stated that his paper dealt only with fibromata. In referring to Dr. Richardson's case Dr. Powers quoted Dr. Jacobi of New York who reported a case of extremely high temperature which he had observed; a number of men disputed the accuracy of his observation whereon Dr. Jacobi said that when the clinical facts collide with previously existing scientifific knowledge the latter goes to the wall and the facts stand. Dr. Powers said that he is quite ready to accept Dr. Richardson's conclusions.

CYSTS OF THE SPLEEN.*

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Splenic cysts, unaccompanied by cystic formation in other structures, do not often occur. The classes found are: 1, Dermoid cysts, one of this type being reported by Andral; 2, simple, serous, or blood cysts, of which a few cases have been reported; 3, echinococcus cysts. Although the latter usually occur in association with similar cysts in other organs, there are reported, according to Coen, as quoted by Douglas, 61 cases of solitary splenic cysts, although the spleen is involved in only from 1 to 3 per cent. of human echinococcus.

The etiology of cysts of the spleen in the case of dermoids and echinococcus may be summarily dismissed with the statement that it is the same as in other structures. Simple serous or blood cysts are of more interest. They are called by the last name of the three by certain authors from the fact that they are all thought to occur from an extravasation of blood within the organ or its capsule, the sanious contents remaining indefinitely or being replaced by a fluid, sometimes clear, sometimes straw-colored. Others, however, attribute the serous and the blood cysts to different causes. Andral reported a case of simple serous cyst in the center of the spleen, and Leudet a multilocular cyst in a spleen that was not enlarged. Boettcher found a multiple serous cyst in an amyloid spleen and noted that some of the

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cysts were traversed by fine trabeculæ of connective tissue. He attributes the cause of these cysts to occlusion of the arterioles, due to the amyloid change with fatty degeneration and ultimate softening and sloughing of the splenic parenchyma. For the most part, however, we can say that serous cysts in the spleen are formed precisely as elsewhere. The enlargement and the associated changes accompanying chronic malaria seem to favor the formation of splenic cysts, as is shown in the case of Livois, Marcano and Ferecol, Spencer Wells, H. C. Cutcliffe, Giuliano, and myself.

Blood cysts are found more frequently than simple cysts, and essentially follow hemorrhage into the splenic substance or, as happens in the majority of cases, just beneath the capsule. This variety of cyst forms more rapidly than any other, in the nature of the case. However, full development is not necessarily reached early. In Credé's case ten years intervened between the time of traumatism and of operation. Irregular development is seen in some of them, periods of rapid increase alternating with periods of quiescence, caused by additional hemorrhages.

Cysts of the spleen contain a capsule, lined with endothelial cells, except dermoids, which are lined with epithelium. The capsule is made up of fibrous tissue containing now and then unstriped muscle fibers. In Foerster's case the cyst was surrounded by cartilage. Hydatids give us a more complex capsule, externally is a more or less complete layer of fibrous tissue, adventitious in origin, the cuticular membrane separating, as it were, the structure of the containing organ from the echinococcus capsule proper, the endocyst. This inner wall collapses and curls up when removed, has a characteristic lamination of seven or eight layers, and has a gelatinuous appearance. The endocyst has an external wall and an internal, the former having the appearance of "highly elastic, lamellar cuticle," the latter that of "granular matter, cells, muscle tissue (unstriped), and a water-vascular system," according to Sutton. Extending from the lining of the hydatids we expect to find daughter cysts, although it is a well-known fact that they are not uniformly present.

The simple serous cyst contains a fluid varying from clear colorless to straw-colored. In this fluid are to be found sometimes a small amount of débris from more or less completely broken down cells. The specific gravity varies from 1000 to 1028 or 1030, and Ruess has formulated a table to determine the amount of albumin approximately from the weight of the fluid, the essence of which may be stated thus: Below 1008 there is little or no albumin; at 1008 the albumin is 0.2 per cent., and for each point of increase in specific gravity there is between 0.3 per cent. and 0.4 per cent. increase in the amount of albumin, being nearer 0.4 per cent. than 0.3 per cent. For example, at 1008 the amount, as stated above, of albumin is 0.2 per cent.; at 1009 it is 0.6 per cent.; at 1010 it is 1.9 per cent.; at 1011 it is 1.3 per cent. It must be remembered that hemorrhage into a simple cyst will give contents similar to an original hemorrhagic cyst and will thus produce confusion as to the original nature of the fluid. However, it is claimed by some, as mentioned already, that the simple cyst of the spleen originates from hemorrhage.

Blood cysts of the spleen have been found far more frequently than simple cysts. Yet, as Loomis and Thompson claim, it is probable that some of these are simple cysts into which bleeding has taken place. The same characteristics of fluid are seen that blood may assume when long confined anywhere in the body. The color of the fluid is black, brown, reddish yellow, red or yellow, and if the cyst is of long standing the contents vary in consistency according to the extent of absorption and the abundance of serum.

In reviewing the cases of cystic spleen exclusive of echinococcus it is found that the contents vary largely in the proportionate distribution of the chief constituents. The fluid is degenerated blood in most cases and may contain red and white blood cells, cholesterin crystals and shreds of tissue. A case reported by Pean had calcareous granules in the fluid. Terrier's case had blood clots which brightened on contact with oxygen. Piccinelli reports an ossified cyst of the spleen. It is rare to find a splenic cyst in which the greater part is made up of cholesterin. Andral, in 1829, found a splenic cyst with fibro-serous walls whose interior contained fatty matter, like tallow, in the midst of which some hairs were scattered. This has been classified as a dermoid cyst.

Echinococcus fluid is clear, free from albumin, neutral or alkaline in reaction and of a specific gravity of 1004 to 1010. Small amounts of grape sugar and albumin are at times found, but the specific gravity, according to Ruess' table, can not allow large percentages of albumin. Inorganic salts occur in considerable amounts, while inosit and succinic acids are occasionally seen; traces of urea and creatin have also been found. Boinet and Chazoulier discovered and isolated the toxic ptomains of this fluid. The best evidence is in the hooklets and scolices of the parasite. Besides these there are observed at times shreds of faintly yellow membrane. These alone constitute a positive diagnosis of hydatids, and yet these microscopic findings are not always present. Virchow was the first to recognize the true nature of echinococcus multilocularis which had theretofore been accepted as colloid carcinoma. Numerous small round cavities filled with a gelatinous fluid constitute in the aggregate a large mass resembling a tumor. The central cavities are often found broken down, or fused, as it were, into a large cavity. Here scolices are rarely found. Daughter cysts become separated occasionally from the maternal growth and lie loose in the fluid, escaping, it may be, in great quantities with the liberated contents. When the primary cyst produces no buds, it is called acephalocyst.

Cysts of the spleen, when small and uncomplicated, present no symptoms and pass unnoticed to the postmortem table or to the grave. When, however, complications or considerable size become features of such a cyst or cyst group, then physical signs and symptoms are present, although they are, by no means, always clear enough to make a diagnosis. Out of seventeen cases in which attempt was made to show some previous or present possible etiology there were five cases preceded by traumatism, five by malaria and two by both. One patient died of mitral affection and two of Bright's disease. One patient developed the initial symptom during an attack of mumps. One developed immediately after parturition, and a second followed parturition, succeeded shortly by trauma. So that we see seven out of seventeen had a history of malaria, in some of whom enlargement of the spleen had been recognized before the cyst formed; and eight, not including one parturient patient, had traumatism over the spleen. Where sex is mentioned the division is equal. The youngest patient having simple or blood cyst was 7 years old. The patient, if the cyst be large enough to call his attention to the fact that a tumor is present, gives a history of the first appearance being in the left hypochondrium and growing down from under the ribs. This he may reduce with more or less completeness back into the original site, but such restoration is, of course, limited by the size of the growth and the extent and density of adhesions. Out of eleven cases of simple and blood cysts only two were fixed. Recognition of cyst development in a misplaced or wandering spleen would be a practical impossibility unless diagnosis of the wandering spleen had been made before cyst formation had begun. In Bardenheuer's case the spleen was in the pelvis. Pressure symptoms and those produced by dragging are the chief subjective evidence that anything has gone wrong. Adhesions aid these in producing symptoms in the case of echinococcus. The habits of a patient or his place of abode may give beneficial help to determine echinococcus, but these have no bearing on simple serous or blood cysts, except in so far as malaria is a causative agent. Nausea and vomiting, together with pain in the left hypochondrium, occur. By pressure, retention of the feces or obstruction of a ureter occurs, or pressure against the diaphragm, heart and lungs is so intense as to produce dyspnea. Some of the cases have had severe colics and some have developed ascites and edema of the legs. Mosler has stated that pain is an early symptom in echinococcus of the spleen, beginning in the left hypochondrium and extending into the lumbar region. In Martineau's case pressure of the enlargement on the lumbar plexus caused pain in the left lower extremity, diminished tactile sensibility and flexion at the hip joint.

The tumor, if large enough to palpate, is found to be movable and easily reducible into the original splenic site in all of those cases of cysts which have not become inflamed and adherent or which are not too large, and in echinococcus which habitually produces more or less peripheral adhesions to adjacent structures so that we may not be surprised to find it thoroughly immovable by manipulation and respiration, and we rarely expect to see it movable without any limitations except the normal supports of the spleen.

The growth may present a fluctuating mass or, if echinococcus, may give the hydatid thrill, but by no means constantly. This is absent in 50 per cent. of cases, especially in solid or deep cysts, and it appears in other conditions, viz., ascites and ovarian tumors, some authors claiming higher frequency for it in the latter conditions. Hence, its diagnostic value is little. The surface may be smooth and even or give a lobulated presentation to the hand, caused by multiple or multilocular cysts.

On aspiration the fluid found will give a clue to the diagnosis. But when suppuration has occurred the characteristics are so obscured as often to be worthless. If there is any probability of such a cyst being hydatid or having suppurated, aspiration should by no means be resorted to for diagnostic purposes.

Differential diagnosis may be made between cystic spleen, on the one hand, and, on the other, abscess of the spleen, ovarian cysts, pancreatic enlargement, hydronephrosis, cysts of the mesentery, and hypertrophied spleen as found in malaria and leukemia. The site of the tumor, the direction of its growth, its attachments or, what amounts to the same thing, the directions in which it may be moved, the pressure and traction symptoms, the constitutional condition of the patient at the time and prior to the beginning of the growth taken together make it possible in some instances to differentiate correctly in these rare cases. In others, even the majority, the surgeon simply will recognize that he has a surgical condition, changing or confirming his first opinion on opening the peritoneum.

Spleen cysts last for years without producing symptoms, remaining *in statu quo*, or gradually or suddenly attaining large size. Echinococcus cyst may terminate by complete disappearance, due to death of the echinococcus or to deprivation of nourishment from calcification of the walls; the more usual termination, however, is by suppuration, or rupture, which may take place into any hollow viscus and allow escape of the fluid, producing a cure; or perhaps into the pleural cavity, causing violent symptoms and even rapid dissolution, or into the lung. The escape of hydatid contents into the body cavities is capable of producing secondary hydatids, as demonstrated by Martin's case. His patient, 37 years old, had had hydatids of the liver ten years and felt something give way in the upper abdomen. Shortly afterward he had pain in the back and the epigastrium, nausea, vomiting and rapid emaciation. On operation the cyst was found ruptured and both visceral and parietal peritoneum were covered with hydatids from the size of a nut to the size of a hen's egg. Though serious, perforation into the peritoneal cavity is not always fatal. Skoda narrates a case in which the principal symptoms were pain, rigors, wiry pulse and cyanosis. Patient recovered.

Henoch claims that the urticaria which sometimes follows the removal of the fluid is due to escape of a few drops into the peritoneal cavity.

The final outcome of cysts of the spleen varies with the type of cyst and the course it pursues. Small simple cysts cause no trouble. Larger cysts produce a more unfavorable prognosis. Blood cysts are more prone to grow, owing to repeated hemorrhages occurring within them. Echinococcus may rupture into a viscus and escape to the outer world, producing cure, or into an internal cavity resulting in death. When abscess formation follows a cyst the prognosis is that of the former. Complete cure follows these cysts rarely, by absorption, shrivelling and calcification of the capsule. This happens in echinococcus only when the tenia is dead, not invariably then.

I lay down as the first rule for treatment that these cases should be operated on by incision, not by puncture, if the cyst is large enough or is producing symptoms enough to demand treatment; I might more correctly, I believe, say if the cyst is sufficiently large to produce clear physical signs, whether the cyst belongs to one or the other variety, for in absence of hydatids elsewhere one can not make accurate differential diagnosis between them. Splenectomy is to be done in those cases in which the organ is so perfectly destroyed as to render it of no further service and not so completely adherent that its removal becomes hazardous. In cases where the spleen is not absorbed and in those where manifestly it can not be removed with safety, the better procedure will be to drain the sac after suturing to the abdominal wound. Giuliano, in an article on blood cysts, states that diagnosis can not be accurate, and then advises either puncture or celiotomy, leaning to the former, if one may judge from the text. Splenectomy, he says, is not warranted in this class. In his researches he has found 15 cases besides his own. Excision of the spleen seems to me a far more judicious operation than simple removal of the diseased area. Hemorrhage can not fail to follow the latter far oftener than the former.

Tapping, injections and excision have no field for usefulness; the treatment must be splenectomy or open cyst drainage. If, however, one can sufficiently assure himself that the cyst is serous or hematic, then aspiration once or twice cures; and, if on reaching the spleen and aspirating, there is no doubt of the condition, a cure may be relied on if all the fluid is removed and the wound closed.

I could find records of eleven patients with serous or blood cysts treated by aspiration, all of whom recovered; eight cases of splenectomy, including my own, in all of which cure followed. One patient was marsupialized after curetting, cured; four patients were treated by injection of caustics, two of whom died; two patients were treated by resection and cautery, both recovering.

My own case is as follows:

REPORT OF A CASE.

History.—Mrs. H. L. S., white, age 39, came to me November 24, 1904, being referred by Dr. J. H. Laws. Patient is American born, housewife. Her father died at 61 years of age of apoplexy. Remainder of her father's family living in good health. She is the mother of six children and had no disease except those of childhood, and "fever" when small. Three years ago she had tertian chills for a period covering about one year. In August, 1903, she first noticed an enlargement in her left hypochondrium, which gave her no pain until the spring of 1904, although it grew steadily. She complained of pain under the left scapula which ran forward and down the left side. Oppression in the region of the heart. The pain under the scapula was increased by pressure on the tumor. There was a dragging, pulling sensation in the hypochondrium. She had noticed an increasing shortness of breath on exertion; this had not been present previous to the development of the tumor. She had lost 14 pounds weight in the past year. She has, for the last month, had considerable nausea and vomiting.

Examination.—There was present on examination an enlargement extending from the margin of the ribs at the left hypochondrium to within three or four inches of the pubic arch. Fluctuation was present, the mass was fairly movable, moved on respiration, and could be reduced into the space underneath the left margin of the thorax, but escaped immediately on removal of the hand. There was no leucocytosis.

Diagnosis.—Multilocular cyst of the spleen.

Operation.—The abdomen was opened through the left linea semilunaris, the incision being six inches long. The cyst was more easily approached through the transverse mesocolon, owing to adhesions between this structure on its upper surface and the spleen. The growth with the spleen was removed without being opened; but on cutting the vascular attachment and attempting to lift the tumor out of the abdomen, cystic fluid escaped through one of the vessels and dropped into the pocket whence the tumor was removed. Hence, not knowing but that I had echinococcus to deal with, the edges of the space were sutured to the wound, which was drained for a few days. The patient left the hospital on the twenty-first day, entirely recovered.

The cyst wall was at places very thin; there were several large pockets intercommunicating, and the splenic substance was obliterated except an ounce or two. The cystic spleen weighed two and one-half pounds. The fluid was clear and colorless. Specific gravity 1006, contained no scolices or hooklets and no albumin. The lining of the cavity contained no epithelial cells and was smooth and glistening and easily separated from the surrounding tissue. The wall was laminated fairly well and contained white fibrous and a small amount of unstriped muscle tissue.

This was, it seems, a case of simple cyst of the spleen and the only etiology discoverable was the fact of a long siege of malaria preceding the formation. I have been unable to determine the connection between cysts of the spleen and enlargements due to malaria.

REVIEW OF CASES OF SPLENIC CYSTS.

Without presuming to make a rigid classification, I give below a brief review of the cysts of the spleen covered in the literature.

DERMOID CYST.

1. Andral: Dermoid. Fibro-serous walls: containing a fatty matter, like tallow, and hairs scattered throughout.

SEROUS CYSTS.

1. Garcia: Man, age, 36, syphilis six years ago, tertian fever cured by quinin; fall from horse causing contusion of abdomen followed soon; one month later localized pains in abdomen; digestion poor, enemas required. Tumor in left hypochondrium, which grew still another month. Puncture liberated odorless gas and tumor diminished; next day second puncture liberated quart of fluid color of white wine, clear, transparent sp. gr. 1004, contained albumin and sodium chlorid. Another puncture after three months, 300 grams; cured.

2. Gauget: Laborer, age 46, alcoholic history, dyspnea on exertion for some months. Symptoms of asystole. Died in collapse. Autopsy: Spleen slightly enlarged and contained yellowish liquid in rounded regular pocket size of hen's egg, and a second the size of a walnut.

3. Leudet: Multilocular serous cyst: volume of spleen normal, surface normal. Cavity of four or five cells in splenic tissue; fibrous wall pavimentous endothelium, and contained serous liquid. This was in a woman 60 years old, who had mitral affection.

4. Foerster: Serous cyst of spleen with cartilaginiform wall seen in the collection at Wurzburg.

5. Crede: Man, age 44, pain five days following trauma over spleen. Tumor size of fist one year before operation in left hypochondrium; grew rapidly to size of fetal head fluctuant, mobile fixed at upper part; confused with hydronephrosis. Splenectomy. Cured. Fluid yellow, limpid, with numerous cholesterin crystals.

6. Mattei: Autopsy: Man, age, 68; spleen weighed 370 grams; tumor size of orange, calcified at points on surface, cartilaginous at other points. Fluid yellow, transparent, contained albumin. The central cyst was size of turkey's egg and had seventeen smaller ones surrounding it. Under microscope, cholesterin, formless masses of lime salts, granulous globules and proteid detritus.

7. Wilks. Old woman died of Bright's disease. Cysts also in kidneys. Cysts of spleen size of walnut and a few smaller on surface. Lined with smooth membrane and contained serum. Says another similar specimen from a man who died of Bright's disease is in Guy's museum.

8. Klippel & Lefas: Man, age 71, attacked long ago by paretic phenomena of four extremities. Autopsy: Spleen weighed 235 grams, and contained a cyst the size of a large walnut, enclosing a clear yellowish liquid, a second cyst size of small walnut, easily enucleable.

9. Boettcher: Multiple serous cyst, amyloid spleen, cysts varied in size from flaxseed to pea, some of them traversed by [illegible] æ. Lined with single layer of flat en[illegible] thought, to occlusion of arterioles, from [illegible] their walls, with fatty degeneration [illegible] in parts of spleen pulp.

HEMATIC CYSTS.

1. E. Bocchia: Male, age 24, traumatism over spleen six years ago; pain for some days. Had had present disease three and one-half years. Pains increased with tumor in left hypochondrium. Diagnosis splenic tumor. Puncture. Cured. Dense chocolate-colored liquid, alkaline, and had physico-chemical characteristics of blood. Evacuation next day by incision under cocain, on reaching cyst drew off 2,140 grams of fluid by trocar. Sutured wound. Healing per primam.

2. W. Minervini: Woman, age 44, robust multipara; tumor larger than adult head, in lower abdomen. Immovable. Fluctuating. Laparotomy. Splenectomy. Sero-hematic cyst in ectopic spleen. Claimed to be second thus far observed. Recovery.

3. Porge: Purulent hematic cyst, size of walnut; cyst cavity enucleated, wall thick, fluctuant, yellowish gruelous odorless fluid. Numerous red globules; globules of pus and cholesterin crystals in fluid. From the report I judge this was found postmortem.

4. Baccelli: Woman, age 27; married three years, pregnant four months. Two months' back traumatism over spleen. Pains after four days, which grew worse. Tumor of left upper quadrant, fluctuant, moved with diaphragm. Diagnosis cyst of spleen, from direction of growth, its connections, and movement on respiration. Two punctures and drawing off hematic fluid. Cured.

5. G. Chavier: Soldier, constipated three days, with some colics; abdomen somewhat ballooned. Put to bed, dieted, given sod. sulphat. That night had violent abdominal pains. Purging had no effect; passed no gas during day. Kicked over spleen seventeen months before by a mule. Died. Autopsy: Much foul gas on incising peritoneum; cyst of spleen, size of a Savoy biscuit, rested on anterior surface of stomach. Not adherent. Contained reddish brown extravasation between capsule and splenic substance; 1,870 grams of fluid. In pocket was organizing brownish fibrous deposit.

6. A. Heurtaux: Woman, age 27, single [illegible] years ago. Pain continued in left side sc[illegible] mor a year afterward size of fist, not [illegible] had grown regularly since, till now it c[illegible] left side of abdomen. Fluctuating. Di[illegible] cyst supposedly hydatid. Laparotomy: ([illegible] by serous leaf covering it. Drew off 9¾ liters, opened, curetted, irrigated, marsupialized and drained. Recovery. Fluid contained blood cells, leucocytes, granulo-fat cells and cholesterin.

7. Livois: Man, age 46. Had severe intermittent fever four years before: tertian. After first attacks had pains in left side and noticed tumor, which grew to large size; fluctuated. Diagnosis cyst; connections not determined. Entered hospital for ulcer of leg. Did well and asked to be released. Eleven days

from entrance had violent colics, vomiting and diarrhea and died in three hours. Autopsy: Much reddish serous fluid in peritoneum. Cyst of spleen, size of ostrich egg, was found. It contained a great quantity of rosy matter, filamentous, and had much affinity with fibrin. Weight of spleen and cyst, 7 pounds. Liver was enlarged and stomach distended with greenish liquid.

8. Pean. Woman, age 20, single. Two years ago had a swelling in the hypogastric region, with pains. Symptoms gradually increased, and became very violent two months before operation, finally unbearable. Tumor in hypogastrium like full term gravid uterus, but fluctuated. Opened abdomen, punctured, drew off 3 liters of thick viscous yellowish fluid. Removed most of cyst and spleen and cauterized remainder. Recovery. Fluid contained albumin, leucocytes, red blood cells, cholesterin and calcareous granules.

9. Pean & Rousset: Girl, age 7, sero-sanguinolent cyst. Diagnosed by puncture. Treatment by caustic. Death two months from beginning of treatment followed by injection iodin, from acute peritonitis.

10. Marcano & Ferecl: Man, age 31, malaria three consecutive years. Three years ago spleen became voluminous, causing dyspepsia. Colics two years ago, dyspepsia, nausea and vomiting after eating. Symptoms again at end of two years, but became better, and recurred after another year. Tumor in epigastrium and left hypochondrium, fluctuating, spontaneous pains not increased by pressure. Puncture, resulted in drawing of 300 grams fluid, chocolate colored, viscous and containing blood cells. Treated by injection of iodin and permanganate of potash, one or other three times a day.

11. Quintard & Pean: Woman, age 53. hematic cyst, treated by caustics. Death some days after opening pouch, due to splenitis and acute peritonitis.

12. Knowsley & Thornton· Girl, age 19. Painful tumor in left side two years, grew rapidly, fluctuating, movable. Diagnosis doubtful, but spleen was eliminated from low position. Splenectomy. Fluid reddish serous with cholesterin. Recovery.

13. Spencer Wells: Woman, age 21, married; at four years had intermittent fever lasting two years. Hypertrophy of spleen. Married at 19 years of age. After one year had diagnosis of ovarian or periovarian tumor. Another diagnosed tumor of left ovary. Had normal labor same year. Tumor descended, not attached to ovary, freely movable. Wells diagnosed hypertrophied spleen. Patient grew much worse. Diagnosis corrected by puncture. Cyst broke during operation, and contained 4 or 5 liters of reddish brown liquid, which showed red globules and leucocytes. There were numerous adherences. Incomplete removal. Cured.

14. Ferrier: Woman, age 33, married twelve years, three children. During attack of mumps one year previous had pains in left side of abdomen, which became larger, growth and pain persisted, tumor to left of umbilicus, size of fist, movable and had large pedicle from hypochondrium. Diagnosis cyst, perhaps hydatid of epiploon or spleen; examination was painful. Laparotomy, excision and cautery. There were many adherences. Contained fluid blood clots, black, but becoming red in atmosphere. Cured.

15. Verneuil: Said he had seen four cases of hematic cysts, three of which were cured by trocar.

16. Chalite: Woman, age 36, had dyspnea, heaviness and abdominal pains. Two years before after parturition swelling of abdomen and edema of legs, abdomen enormous, left side more prominent. Tumor hard, painless, mobile rising below left false ribs. Diagnosis cyst of spleen, possibly hydatid. Splenectomy. Eight liters of brown liquid, in which rags of splenic tissue floated. Cured.

17. Mareschi & Ghetti: Woman, age 42; severe pains in left hypochondrium twelve days after eighth parturition, lasting four or five hours, ceased after twenty-five days. Nine months later pain returning while carrying heavy object: four months later traumatism over spleen, and soon noticed small painless tumor that grew rapidly. It was movable, elastic, fluctuant. Splenectomy. Weight, 1,315 grams, contained blackish limpid liquid showing white and red cells. Recovery.

18. Barbacci: Autopsy: Found cyst of spleen size of hen's egg. Transparent viscid fluid, color of gold flowed, coagulum of fibrin in pocket. He found a second cyst size of a lentil with similar fluid, alkaline and albuminous. He called this a lymphatic cyst.

19. H. C. Cutcliffe: Male, age 40, had intermittent fever four months and enlarged spleen. Twelve days ago swelling in left side under ribs, preceded two or three days by acute hypochondriac pain. Tumor hard and free from tenderness; after five days seemed to fluctuate. Punctured. Found degenerated blood. Cured.

20. Spillman: Man, age 51, sick three days; this appeared suddenly, with violent shivering in left side, followed by a dry, painful cough, dyspnea. Died in ten days. Autopsy: Spleen contained cyst size of fetal head, contained yellowish liquid, cholesterin, fluid red by transmission. Density of water. Analysis proved to be hematic.

21. Giuliano: Man, age 33, Malaria for some years, six months before coming to Giuliano had trauma of left hypochondrium and felt intense pain. Large tumor in left hypochondrium, connected with spleen. Puncture liberated degenerating blood. Recovery.

22. Baginsky: Girl, age 13, cystic tumor connected with spleen, resulted from trauma and increased gradually. Puncture brought 2 liters of red brown liquid containing many red corpuscles.

Below I give another group not definitely classified by the men who found them.

1. Piccinelli: Priest, age 67, digestive disturbances thirty years before. In time oppression in epigastric region. Sharp, darting pain behind left hypochondrium five years ago while at a banquet, and extended to splenic region, where it remained. Became worse with complications till death. Autopsy: Spleen in place, undersize, contained a hard tumor larger than hen's egg, situated at the hilum, and full of knobs. Incised with difficulty and viscid gelatinous fluid came out: an ossified cystic tumor.

2. Giovinardi: A pathologic specimen, consisting of a cyst cretified in its walls, which he found in the spleen of a cadaver. It contained an albuminous liquid which effervesced in hydrochloric acid. Cyst was the size of a small nut.

3. J. H. Haswell: Man, age 57, died of cancer. Fullness of noticed before death. Fluctuation. Con- small amount of whitish débris, showing globules, cholesterin and a few granular red cyst weighed 3¾ pounds. On opening, a semipultaceous matter exuded, mostly in rounded masses of a dirty yellow; among these were round, jelly-like globules, the size of a walnut, from which puncture brought a clear fluid. No booklets or scolices were found nor any dermoid structure. Haswell calls this a mucous cyst. Almost certainly it was echinococcus.

4. Bardenheuer: Woman, age 47, a few months previous had vivid pains in left hypochondrium. Tumor appeared and was diagnosed cyst of ovary. Bardenheuer saw patient six months after beginning of pain. Tumor in pelvis size of infant's head, pushed uterus slightly to right. Slightly movable. Diagnosed cyst of left ovary. Exploratory incision. Resection and cautery. Recovery. Contents not given.

INDICATIONS FOR THE REMOVAL OF THE PATHOLOGIC SPLEEN.*

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OMAHA, NEB.

Case 1.—Miss S., clerk, aged 40, presented herself at the clinic of the University Medical College January 27, 1904, with the following history:

History.—Family history negative. One year ago she had German measles. Two weeks later she contracted a severe cold which lasted two weeks, and she has not felt well since. She is prone to headaches and becomes easily tired. For past six months she has complained of languor and weariness on slight exertion; also of a nausea, faintness, shortness of breath and occasional sharp pains in her left side near the costal arch. In November, 1903, she discovered an enlargement in the left upper quadrant of the abdomen extending below the arch of the ribs. She was able to continue her occupation, that of clerk in a dry goods store, until December, 1903, when she was compelled to stop it on account of the increasing muscular weakness and her inability to stoop because of pressure and soreness caused by the abdominal growth. She has never lived in a malarial district.

Examination.—She is a small woman of an anemic appearance, somewhat emaciated. A firm tumor is to be felt in the left upper quadrant extending to the median line; it moves with respiration and cannot be pushed up under the ribs. The condition excited Dr. Thomas Truelson's suspicions and he made a blood count which is recorded as follows:

Reds	3,968,000
Whites	9,600
Polynuclears (per cent.)	77
Small lymphocytes (per cent.)	17
Large lymphocytes (per cent.)	5
Eosinophiles (per cent.)	1
Hemoglobin (per cent.)	37

The heart was somewhat more rapid than normal, lungs and liver were normal. Dr. Truelson felt justified in making a diagnosis of splenic anemia and put her on medical treatment and made numerous blood counts. I am greatly indebted to Dr. Truelson for the benefit of his careful and frequent clinical records extending over a year.

In the summer of 1904 I saw her and the condition was about the same.

Later History.—Early in January, 1905, she became shorter of breath, more nauseated, had considerable rise of temperature for a period of two weeks, with pain in the region of the splenic enlargement, and distinct tenderness on pressure. The mass now became distinctly larger and was less movable than before. She also complained of increased difficulty in stooping, evidently because this caused pressure of the mass between the posterior bony wall of the abdomen and the arch of the ribs in front. For some time she had complained of a dry cough which she said seemed to be excited by a dragging or pulling sensation at the lower part of the left lung. There was no hemorrhage from the mucous membranes or diarrhea.

After she had recuperated from her febrile attack the question of splenectomy came to the fore with more force, since she seemed to be losing ground and it was realized that to wait longer would only increase the risks of a successful operation.

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* Read in the Section on Surgery and Anatomy of the American Medical Association, at the Fifty-sixth Annual Session, July, 1905.

Operation.—February 23, 1905, it was decided to send her to Immanuel Hospital for operation. The enlarged spleen at this time extended to the level of the umbilicus, and two inches to the right of the median line. The patient was more emaciated than at the beginning, weighing 95 pounds and for several months the characteristic bronzing of the skin had become more and more noticeable.

On the day of the operation the blood count was as follows:

Reds	3,936,000
Whites	15,600
Hemoglobin (per cent.)	38

The patient was operated on February 25, 1905, at Immanuel Hospital, in the presence of the students of the College of Medicine of the University of Nebraska and several visiting physicians; the spleen was removed. An eight-inch incision was made through the left rectus muscle from the ribs downward, separating the fibers of the muscle. Universal adhesions were at once apparent fixing the hypertrophied spleen to all the surrounding viscera. Remembering the unfavorable prognosis under such conditions the removal was done with the utmost caution. By ligating the vascular adhesions in two places and then cutting between the ligatures a remarkably small amount of blood was lost. The gastro-splenic ligament was treated in the same manner. Finally, by turning the spleen toward the left the vessels of the pedicle were ligated with silk, separately, and the removal was complete.

Large gauze pads wrung out of very hot water were pressed into the cavity formerly occupied by the enlarged spleen and this very soon stopped the slight oozing. The abdominal wound was closed and the patient put to bed with considerable shock, from which she soon rallied.

Result.—Her convalescence was uneventful. There was no fever and no increase in the pulse which remained almost constantly at from 80 to 84 beats a minute. She was allowed to sit up on the sixteenth day and to leave the hospital in three weeks.

Examination of Spleen.—The hypertrophied spleen was found to weigh six pounds and one ounce. It was lobulated, the edges were rounded and on the cut surface large necrotic areas presented themselves, the appearance being suggestive of sarcoma.

Subsequent History of Patient.—Very soon after the operation the patient began to gain in weight and the last I heard from her, May 25, three months after the operation, she wrote that she had gained 25 pounds. Her faintness, shortness of breath, muscular weakness, etc., have been steadily less marked. The bronzing of the skin began soon to disappear and when she left Omaha, two months after the operation, her skin had lost all trace of it.

A leucocyte count the day following operation showed 27,-000 leucocytes. The further detailed report will be published by Dr. Thomas Truelson, who has worked out the clinical and pathologic data in the most thorough manner, to whom I wish to express my thanks.

FUNCTIONS OF THE SPLEEN.

Until the physiology of an organ is known its pathology is likely to be elusive. On the other hand, a study of its pathology is often rewarded by a clearer knowledge of its physiology.

Regarding the function of the spleen about all that can be definitely stated is that it belongs to the hematopoietic system. The exact nature of its function is yet conjectural. That it manufactures white blood corpuscles, that it breaks up and destroys the reds, and that the splenic cells liberate hemoglobin, which passing to the liver is there transformed into bile pigment, are some of the functions commonly associated with the spleen.

That all these functions are performed by the spleen, in the light of recent observations, is inconceivable. Against the time-honored opinion that the lymphoid tissue of the spleen manufactures white blood corpuscles and destroys the reds is the undisputed fact that during the first few days after the spleen has been removed the number of leucocytes increases more than 100 per cent., while the number of red blood corpuscles is considerably diminished.

If a factory having almost a monopoly in the manufacture of a certain commodity be burned, there would scarcely be likely to be an immediate increase of that article on the market. The logical deduction is that instead of elaborating white blood corpuscles the spleen destroys them, and the decrease in the reds points to the spleen as their manufacturer—not as the place of their destruction.

These deductions support the opinion of Vulpius that the spleen transforms the whites into reds. Vulpius reached this conclusion by observing that when the spleen is congested by natural or artificial means the blood habitually contains a maximum number of reds and a minimum number of whites.

Williamson[1] found that by a special method of staining he was invariably able to determine nucleated red blood-cells, many of them in a state of nuclear division, in spleen smears of hogs and cattle. The same observation had previously been made by Arteaga,[2] of Havana, using the spleens of cats and dogs. In fact, most of the experiments of recent years lend support to the opinion that in vertebrates the function of the spleen is the manufacture of red blood corpuscles.

That the spleen is an important elaborator of the blood directly or through the medium of an internal secretion which performs that function is further proved by the well-known fact that an acute anemia caused by hemorrhage is always followed by a temporary enlargement of the spleen, due no doubt to an extra amount of work being thrown on it in an effort to make good the loss. If its function was to destroy red blood corpuscles and to elaborate leucocytes would there be need of an increase of its function?

If we adhere to the orthodox opinions, the opinions laid down by the text-books on physiology, we would *a priori* expect splenectomy to induce immediately a great decrease of the whites and an increase of the reds, a phenomenon directly the opposite of that universally observed. Continued careful observations of the blood changes in pathologic conditions of the spleen, as well as of the condition of the blood after splenectomy, are likely to place the physiology of this organ on a securer basis than the purely speculative one of the physiologists.

One of the most attractive fields for physiologic research is along the lines of the internal secretions. It is not necessary to believe that all the influence the spleen exerts is carried out within the organ itself. A toxin or toxins may be elaborated by the splenic cells, which, passing into the circulation, may exert a profound influence over the elaboration of the blood. Although certain blood changes may, and probably do, occur within the spleen, they may be of only minor importance. The major function may be the production of a powerful chemical agent which is projected into the circulation and does its work within the vascular system.

SPLENECTOMY.

In the history of the development of splenectomy as a surgical procedure numerous mistakes have been made. Ignorance of its physiology has led to much blind groping to learn something of the pathology. Many spleens have been removed that should not have been treated surgically and many fatalities are to be charged to insufficient knowledge of the limitations of splenectomy as a curative measure.

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[1] Williamson: Amer. Med., June 3, 1905.

[2] Arteaga: Amer. Med., May 14, 1904.

The border lines between the conditions that may be dealt with surgically and those to be left untouched are becoming better defined though not yet as definite as would be wished. Every item that may aid in increasing the knowledge of the physiology and pathology of this organ, as well as to clear up points in diagnosis is of the greatest value. Unfortunately, the blood-findings before and after splenectomy have been completely recorded in only a few instances.

The discussion of the immediate and remote results of removal of the spleen has been so largely entered into and so recently by such men as Warren,[3] Harris,[4] Bessel-Hagen[5] and many others that it will be passed over briefly. A few well worked out facts may be enumerated. Almost without variation, splenectomy is followed by a marked leucocytosis, the number of leucocytes increasing daily until the maximum is attained in from ten days to three weeks, when there is a gradual diminution and in from four to six months they reach normal again.

The number of red cells, on the contrary, is diminished though in a less proportion and normal is not usually reached until six months or more after the spleen has been removed. These facts seem to show that although the function of the spleen may be performed by other tissues, this vicarious power is gained very slowly.

There is also a decrease in the amount of hemoglobin following the splenectomy. This decrease is not dependent on the loss of blood during the operation. There has also been found to be a permanent increase in the eosinophiles in all observed cases.

In a number of observations the lymph glands have been found considerably enlarged within a short time after the spleen has been removed, an enlargement which did not exist before operation.

The marrow of the bones is found to be denser and a deeper red, and complaint has occasionally been made by patients of an aching sensation in the long bones the first few days after loss of the spleen.

The condition of the blood, in most of the cases observed that long, has been found to have reached normal in six months after the operation and the restoration to health has been complete and permanent as far as observations have been made.

Theoretically, it was supposed that loss of the spleen would lower resistance to infection. Blumreich and Jacoby[6] have proved that a splenectomized animal has as much resistance to infection with bacteria or toxins as if a spleen were present. No observation has been made of any human subjects showing greater susceptibility to infection after splenectomy than before.

MORTALITY FROM SPLENECTOMY.

Having shown that the loss of the spleen is not incompatible with the continuance of life and good health it will be of interest to notice briefly the mortality from the operation. As in the development of all operations, the mortality from the earlier operations is much higher than it should be. Many spleens have been removed that no one would think of removing now. There are certain absolute contraindications to the operation, of which leukemia, *atrophic cirrhosis of the liver* and amyloid spleen are the chief. Some have considered dense adhesions to the surrounding viscera a contraindication, but the question of when such spleens are to be removed is largely a personal one and will depend on individual experience.

From all I can gather from a fairly close scrutiny of the literature I believe the present mortality of splenectomy for all appropriate conditions to be not more than from 15 to 18 per cent. Bessel-Hagen[5] even considers the mortality when there is a real reason for splenectomy to be only 12.2 per cent. When it is remembered that the mortality in these cases before 1890 was probably over 50 per cent., it shows flattering improvement. Perfection of the technic, a more judicious selection of cases and operation at a more favorable period have brought about this lower mortality and will doubtless produce still greater reduction as experience increases.

INDICATIONS FOR SPLENECTOMY.

Given then the proper indications, splenectomy is a proper operation. Its mortality is still sufficiently high to be prohibitive except for a condition incurable by any other method of treatment, or so troublesome that the patient is willing to run a considerable risk for the sake of being rid of his suffering.

In echinococcus or other cysts of the spleen, its removal is practically the only choice, except when adhesions to the abdominal wall, the diaphragm or the abdominal viscera are so great that the mortality would be prohibitive. In such cases, drainage with marsupialization of the cyst cavity has proved satisfactory, though the period of convalescence is likely to be tedious and uncertain.

Cases of abscess of the spleen must be judged on their merits. It certainly would not be good surgery to sacrifice the entire organ, if drainage would do as well. In cases of perisplenic abscess thorough drainage is in most cases the procedure to be preferred. The same may be said of a single abscess contained within the spleen, if the greater part of the splenic tissue be intact. In multiple abscesses, or when an abscess is very large and a great part of the spleen is infected or destroyed, doubtless better and safer results will be attained by entire removal of the organ.

In tuberculosis, if the organ be extensively invaded, splenectomy is the only treatment that will prove satisfactory. In those rare cases in which only the lower extremity is invaded by the tubercles resection well beyond the disease seems to be the operation of choice.

In sarcoma, an early splenectomy may prove curative, but most of the operations are likely to be so late that an early recurrence will be the rule. Exploratory operation as soon as there is a definite suspicion of sarcoma is the only treatment which gives promise of benefiting this class of patients.

TRAUMATIC RUPTURE OF THE SPLEEN.

The most constant symptoms of splenic rupture are collapse from hemorrhage, rigidity of the abdominal muscles on the left side and the occurrence of dullness in the left upper quadrant and the left flank if the hemorrhage is extreme.

Makins, in 292 cases of injury of the abdominal viscera, found rupture of the spleen in 30 per cent. of them, which proves it to be far from rare.

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[3] Warren: Annals of Surg., May, 1901.
[4] Harris: Annals of Surg., July, 1901.
[5] Bessel-Hagen: Arch. f. klin. Chirurgie, lxii, 1900.
[6] Blumreich and Jacoby: Zeits. f. Hygiene, xxix, 1898.

A blow or wound in the splenic area followed by symptoms indicative of severe internal hemorrhage should excite a suspicion of rupture or wound of the spleen and an immediate abdominal section should be done. The course to be pursued will be determined by the conditions found. Splenectomy, suture of the rent, and tamponade each has its place, and on the judgment displayed in selecting the proper procedure much depends.

Death following rupture of the spleen is almost always due to hemorrhage, though it may be due to peritonitis, especially if it is caused by a penetrating wound. Edler[7] states that injuries of the spleen are fatal in 76.6 per cent. of the cases when no operation is done, while Lewerenz[8] claims that the mortality is 85 per cent. In 50 cases of ruptured spleen recorded by Eisendrath[9] in which laparotomy was performed, 28 patients recovered—a very forcible argument in favor of operation. One should not wait for recovery from the collapse, since the hemorrhage is continuous, and if the injury is serious the collapse will become more profound until death supervenes. It is an operation of emergency and should be done at the earliest possible moment. If the diagnosis is not absolutely convincing, it is much more dangerous to wait than to operate when the symptoms point definitely toward an injury in the left upper quadrant. If not the spleen, in all probability some other viscus needs attention.

When the abdomen has been opened and the spleen examined, a decision for or against splenectomy must depend on the extent and character of the injury and the possibility of controlling the hemorrhage by means of suture or tamponade. In general, if the injury is cortical and on the convex border well away from the arteries, not very extensive, and there is not too much pulpification of the splenic tissue, a well-placed tampon may control the hemorrhage. If it is determined to test the effect of tamponade, the operation should not be concluded until the tampon is found to be effective. If the hemorrhage is not checked by this means, the spleen should be removed at once before any more blood is lost. It is only very rarely that suture will be of benefit. The splenic tissue is so friable that the sutures cut out and the hemorrhage is likely to be made worse.

If the injury is a severe one to the lower extremity of the organ and the remainder is intact, a partial excision may be practiced, if the patient is not already too much exsanguinated.

If the injury is extensive and the hemorrhage extreme, splenectomy will be followed by the best results. Warren[3] records 34 cases of splenectomy for ruptured spleen since 1890, with a mortality of 41.2 per cent. Senn[10] says that ligation of the splenic artery will control the hemorrhage, but is followed by death due to toxemia, a poison being produced in the spleen which finds its way to the peritoneal cavity, where it is absorbed with fatal results.

Another important factor which should be taken into consideration in dealing with a ruptured spleen is that the pathologic spleen is easily injured. Lewerenz[8] found that of 131 cases of ruptured spleen, 82 occurred in previously pathologic organs. Such a spleen should be removed for slighter injuries than if the organ was previously sound.

WANDERING SPLEEN.

There are always two important questions in connection with wandering spleen: 1. Does the condition produce sufficient symptoms to demand any surgical intervention? 2. If so, shall splenopexy or splenectomy be done? In answer to the first question, no report has been made of wandering spleen, in which the symptoms have not been so distressing that operation was practically imperative.

To the second question, the answer is not so simple. The natural conclusion is that splenopexy is the safer and more conservative operation.

The facts seem to be that the idiopathic wandering spleen is of the greatest rarity and it is usually caused by hypertrophy. With this understanding of the rationale of wandering spleen, there seems the narrowest conceivable field for splenopexy.

If sufficient splenic hypertrophy is present to have stretched the ligaments and dragged the organ away from its moorings, splenopexy will not hold the heavy pathologic gland in its normal position, and if it did the primary disease would not be cured. It might be said that almost all hypertrophied spleens are wandering spleens within certain limits. The rational treatment here would be to perform splenectomy if the spleen be affected by a form of hypertrophy which is curable by this means, otherwise to let it alone.

There is one exception to the rule that a wandering spleen was a hypertrophied spleen before it began to wander. It is that rather large class of cases in which a general splanchnoptosis exists, the wandering spleen being simply an incident and certainly not to be treated by splenopexy, unless in conjunction with fixation of other viscera.

The mortality of splenectomy for wandering spleen is fortunately low. Warren[3] collects 43 splenectomies in ten years for this condition, with only three deaths, or only 7 per cent.

Wandering spleens have frequently been mistaken for ovarian cysts, uterine fibroids and movable kidneys.

MALARIAL SPLEEN.

Most writers on the surgery of the spleen previous to 1890 condemn splenectomy for malarial hypertrophy. In most cases, successful treatment of the malaria is followed by a gradual involution of the hypertrophied spleen until it reaches normal. It is not always possible, however, to attain this result, and antimalarial medication is fruitless so long as the spleen is retained, but is easily cured after removal of that organ.

Laveran states that the spleen does not protect against malaria, as has sometimes been asserted, but is a receptacle and habitat of the malarial organism. Jonnesco[11] is of the opinion that the removal of the spleen from a patient suffering from malaria cures the malaria by removing the breeding place of the organism. This seems reasonable and the results of splenectomy of the malarial spleen bear out Jonnesco's statement.

Bessel-Hagen[5] has collected records of 88 splenectomies for malarial spleen. Of this number, 24 were done prior to 1891, with 15 deaths, a mortality of 62.5 per cent.; 64 occurred between 1891 and 1900, with 15 deaths, a mortality of 23.4 per cent. A decrease in mortality from 62.5 per cent. to 23.4 per cent. in a single decade goes far to explain the change of opinion of surgeons relative to splenectomy for this condition.

Caution is needful not to subject patients to splenectomy for malarial spleen, unless the condition positively can not be relieved by medical means, but the operation should not be delayed until ascites is present.

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[7] Edler: Arch. f. klin. Chirurgie, xxxiv.

[8] Lewerenz: Arch. f. klin. Chirurgie, lx, 1900.

[9] Eisendrath: Annals of Surg., December, 1902.

[10] Senn: The Journal A. M. A., Nov. 21, 1903.

[11] Jonnesco: Gazette des Hopitaux, lxxi, 1898.

The size of the malarial spleen does not seem to be a factor affecting the mortality, as the largest spleens have been removed with no higher mortality than those of moderate dimensions.

SPLENIC ANEMIA.

There seems to be considerable confusion in the nomenclature of the disease characterized by primary splenic hypertrophy, a decrease in the number of red blood corpuscles, a slight leucopenia, with progressive weakness, hemorrhages from the mucous membranes, vomiting, diarrhea, bronzing of the skin and death in a period varying from six months in the more rapid cases to ten or fifteen years in the slower ones. All these cases, so far as I can determine, are later complicated by hypertrophy of the liver—not always a true cirrhosis—ascites, and all the syndromes described by Banti[12] in his classical paper. Splenic anemia, primary splenomegaly, splenic pseudoleukemia and Banti's disease are doubtless one and the same, masquerading under different names.

This statement seems called for, because of a tendency on the part of some writers to refer to primary splenomegaly, splenic anemia and Banti's disease as three separate and distinct entities. Primary cirrhosis of the liver, with secondary hypertrophy of the spleen, should not be confounded with splenic anemia; neither should any confusion remain regarding splenic leukemia, which stands by itself, being characterized by a marked decrease in the reds and an immense increase of the whites. Even here it is not correct to say that if the proportion of whites to reds is 1-50 it proves the disease to be splenic leukemia and otherwise not. Osler[13] reports a case of true splenic leukemia in which for a protracted period the number of white blood cells was normal, and Murrell[14] states that often the number of leucocytes in splenic leukemia remains normal or nearly normal much of the time. The one test in these cases seems to be the presence of myelocytes, which always proves it to be splenic leukemia.

The following question is of the utmost practical importance: Is splenic anemia a primary disease of the spleen and are the blood changes and other symptoms secondary, or is the splenomegaly merely an incident to a general disease, or is it secondary to the blood changes? Osler[13] takes the ground that the enlarged spleen and the changes in the blood are both produced by the same general condition. If this were the case, it would not be logical to suppose that the removal of the spleen would bring restoration to health. The fact that this does occur has been definitely proved by hundreds of cases.

The views of Sippy[15] seem more nearly to conform to the known facts. He believes the disease of the spleen to be the primary pathologic entity and the blood changes, *et cetera*, to be the product of the splenic pathology.

Whether the anemia is produced by failure of the diseased spleen to elaborate red blood cells, assuming this to be its function, is not proved, but seems probable. Possibly chemical agents are elaborated in the pathologic spleen, which, either in the gland, or after they gain access to the circulating blood, inhibit the production of red blood corpuscles or cause their dissolution and thus induce anemia.

This might be determined by injecting the filtrate of the pulp of a hypertrophied spleen into the circulation of animals. The only experiment of this kind I know of was that of Sippy,[15] but the rabbit unfortunately died too soon to show blood changes. This opens up the possibility of some interesting research along this line, a dose being ascertained that will prove or disprove the existence of a poison inimical to the existence of red blood cells, without being fatal to the test animal.

The cause underlying the hypertrophy of the spleen is not easy to determine. Barr considers it due to a vasomotor paresis of the splanchnic area, arising from disease of the visceral sympathetic ganglia, a theory not proved, but possessing the merit of not being easily disproved.

In the absence of any rational explanation, it becomes necessary to accept the conditions without being able to explain the rationale on which they are based.

The fact that removal of the diseased spleen is usually followed by a still greater diminution of the red blood cells would argue that the pathologic organ, though not possessing its physiologic activity, is not by any means functionless, or there would be no further reduction in the number of reds after splenectomy.

The diagnosis of splenic anemia, if errors would be avoided, should be reached by the greatest care in getting all the facts and eliminating sources of errors. As has been shown by the experience of Osler[13] and Murrell,[14] a case of leukemia during one of those periods when the number of leucocytes is normal, by a careless observer, might be diagnosticated splenic anemia. The presence of myelocytes ought to prevent such an error.

The congested spleen caused by cirrhosis of the liver ought to be recognized from the history and the condition of the liver, though there is not always any material difference in the blood changes. The spleen enlarged secondarily to liver cirrhosis is not nearly so large as the spleen of primary splenomegaly. In liver cirrhosis secondary to splenic anemia, and explained by Banti as due to a toxemia, the products of which passing through the liver cause hyperplasia of the connective tissue such as is found in alcoholics, comes late in the disease, the enlargement of the spleen having existed for months or years before the hepatic condition.

In the amyloid spleen a secondary anemia is always present and the patient's general condition and history ought to prevent mistakes if one is careful.

In malarial spleen, the history is of the greatest value in avoiding diagnostic error.

In splenic anemia, the red blood corpuscles are not greatly reduced in number as a rule. Probably in the majority of cases they will range from 2,500,000 to 4,000,000 in the c. mm., though they may be reduced as low as 1,500,000 or go as high as 5,000,000.

The whites are usually somewhat less than normal. A decided leucocytosis should produce a suspicion that it is not splenic anemia, or one should look for some coincident or accidental cause for the leucocytosis.

The hemoglobin is usually very low and the color index much less than normal.

In pernicious anemia the spleen will be found only moderately enlarged, the reds lower than usually found in splenic anemia. Myelocytes are found in more than half the cases of pernicious anemia, as shown by Cabot's[16] table.

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[12] Banti: Berliner klin. Wochft., 1886.

[13] Osler: Amer. Jour. of Med. Sci., January, 1900.

[14] Murrell: Medical Manual, 1904.

[15] Sippy: Amer. Jour. of Med. Sci., October and November, 1899.

The details of arriving at a correct diagnosis are given so fully by several recent writers that nothing more need be said on this point, except to urge that when a suspicion is aroused of the existence of this disease no detail should be omitted in trying to arrive at a correct diagnosis as soon as possible. The only treatment is surgical, and the sooner the spleen is removed the better will it be for the patient. When early operation becomes the rule, before the patient becomes too greatly reduced by the ravages of the disease, the lower will be the mortality.

SUMMARY OF THE MAIN POINTS DISCUSSED.

1. The more probable function of the spleen is the manufacture of red blood corpuscles, with a strong probability of the existence of an internal secretion which is of value in maintaining the proper relative proportion of the elements of the blood.
2. Splenectomy is contraindicated in leukemia, amyloid spleen, splenic hypertrophy secondary to cirrhosis of the liver, secondary malignant disease and in the essential anemias.
3. Splenectomy is usually preferable to splenopexy in wandering spleen, which is almost always due to previous hypertrophy.
4. In abscess of the spleen, if drainage can be successfully accomplished, it is preferable to splenectomy, especially if the splenic tissue is not destroyed.
5. In cysts, benign tumors, tuberculosis and sarcoma, splenectomy is the operation of choice, unless in the three former conditions resection of the lower extremity will remove all of the disease.
6. In rupture, the organ should usually be removed. The operation should be done promptly, expeditiously, and with every expedient calculated to relieve and to prevent shock.
7. In the severe type of malarial spleen, with failure of any relief of the malaria or the extreme splenic enlargement by medical means, splenectomy will often result in cure.
8. In splenic anemia, internal medication has proven futile. The only treatment that should be considered is splenectomy, which should be done at as early a period as possible while the patient is able to withstand the operation and before incurable complications have arisen.

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DISCUSSION

ON PAPERS BY DRS. BRYAN AND DAVIS.

Dr. M. L. Harris, Chicago, said that one of the most interesting and important conditions which has recently been taken from the hands of the internist and transferred to the surgeon is that of splenic anemia or so-called splenomegaly. Proper blood examinations made before and after splenectomy show that the primary condition is probably in the spleen. In all of these cases, before operation, we find that there has been a destruction of the blood cells—excessive hemolysis. He did not agree with the statement that the experiments show, or tend to show that the spleen in splenic anemia produces red blood cells. Immediately after the removal of the spleen in these cases there is a marked increase in the number of red blood cells, which would show that the red blood cells are not produced by the spleen. In two cases in which he operated for the removal of the spleen, within twenty-four hours thereafter, there was an increase in the number of red blood cells of from 25 to 40 per cent. and in one case there was an increase in the whites of 800 per cent. If these figures show anything it is that the spleen had destroyed both the red and white cells. The fact that there is always a diminished number of red blood cells, and that these cells, after the removal of the spleen, return to their normal number and remain there would indicate that in the enlarged spleen there had been excessive hemolysis. Whatever the function of the spleen may be in regard to blood formation or blood destruction, however, it is not an essential function, because patients live and maintain perfect health after the spleen has been removed. The one feature in the composition of the blood which seems to be permanent and constant after the removal of the spleen is a marked increase in the percentage of the eosinophiles. Whether the spleen has been removed experimentally or for pathologic reasons there has occurred an increase in the eosinophiles often to a remarkable extent and this increase has been permanent. It is now more than six years since Dr. Harris first removed the spleen for splenic anemia, and he has made repeated examinations of the patient's blood every three or four months since. The eosinophiles have increased to 15 per cent. and the percentage has returned to the normal and remained so. The eosinophiles are very marked and pronounced, the granules are extremely large, and they take the stain very brilliantly. This, Dr. Harris said, is the only permanent and marked change that we have been able to discover in the blood after splenectomy.

Dr. Charles A. Powers, Denver, declared that he has recently investigated the subject of cysts of the spleen and he agreed with Dr. Bryan that non-parasitic cysts of this organ are of a sero-sanguineous type and generally sub-capsular. The hemorrhages increase from time to time, and often extend over several years. Less frequently the hemorrhages are sub-peritoneal, at times they may be parenchymatous. In his case, the patient, a young man of 18, who was sent to me from Manitou, was operated on in 1895. He had an enormous left-sided abdominal tumor extending from the diaphragm to the pelvis and over to the right side. After careful examination Dr. Powers decided that it was probably a splenic cyst and operated. The wall of the cyst was densely adherent everywhere to the abdominal wall, and extirpation was impossible. Through drainage was made; the walls proved to be semi-fibrous. The cavity did not shrink, septic absorption took place from the cyst wall, and the patient died on the twelfth day. Autopsy showed the growth to be impossible of extirpation. In his search of the literature he discovered 32 of these cases, of which 28 were available for study. Of these 28 patients 3 were treated by puncture, 2 by incision and injection, 5 by extirpation of the cyst and 10 by splenectomy. Of these various procedures the only one which proved satisfactory was splenectomy: all of the ten patients so operated on recovered. Splenectomy then, is the operation of choice when it is possible.

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[16] Cabot: Clinical Examination of the Blood.

Dr. R. E. Schlueter, St. Louis, mentioned a case of traumatic rupture of the spleen which he saw ten hours after the injury. The spleen had been completely cut in two and on opening the abdomen the two halves could be seen distinctly separated. The patient was a boy, aged 14. The abdomen was opened in the median line and by forcible traction on the belly wall the spleen was easily removed. The hemorrhage was completely arrested before the operation and the boy apparently recovered from the shock. Subsequent to the removal a slight enlargement of all the lymphatic glands of the body was noticed, and also a leucocytosis which never went above 20,000.*

Dr. A. H. Cordier, Kansas City, said that it was important to know if the disease is primary or if it is a secondary manifestation of some disease in another part of the body. He mentioned the case of a man, aged 21, who had had jaundice for 19 years. Dr. Cordier did a cholecystenterostomy at which time he noticed that the liver was very much enlarged and changed, and that the spleen also was enlarged. The patient's billiary symptoms were relieved, but owing to the changes that had taken place in the liver and spleen Dr. Cordier was afraid the results might not be permanent. A year and a half later the man returned with a typical case of splenic anemia. The liver was very much contracted. There is a class of cases occurring in drinking individuals in which there is an enlargement of the spleen, and surgeons must be very careful in their choice of operation. It is a fact that in all of these cases in which there is a contraction of the liver or the spleen there is very rarely ascites accompanying it. Enlargements of the spleen seem to be conservative in a measure, in such cases. Careful diagnosis before operation is very important in order to obtain satisfactory results.

Dr. H. G. Marxmiller, Cincinnati, said that the subject should be divided into two parts, surgical spleens and medical spleens, and it behooves surgeons to be positive in their diagnoses before endeavoring to remove spleens that are only apparently surgical. It has been his good fortune, or misfortune, to see this operation done by many good men where simple hypertrophy of the spleen has been diagnosed as some other condition, such as Banti's disease, splenic anemia, etc. If one will take a dried specimen of the blood and properly stain it the condition of the blood can readily be brought out, and the presence or absence of leucocytes or myelocytes or eosinophiles should caution the surgeon as to the removal of the spleen. Perhaps in a few instances the spleen can be removed with good results. Splenectomy for leukemia and allied conditions has given a mortality of almost 100 per cent. and we should not be quite so bold in the removal of these spleens. Senn, Dock and others have reported cases of splenic anemia that sometimes follow protracted cases of typhoid and malaria, in which complete recovery has followed the use of the *x*-ray. Dr. Maxmiller has had under observation for several years a case of chronic myelogenous leukemia. When he first saw the case, the patient had all the symptoms of splenic enlargement. The spleen reached to the brim of the pelvis and increased the abdominal circumference by eight or nine inches. Although operation had been recommended it would have been folly to have removed this spleen. The presence of the subcutaneous extravasation of blood and the approach of the fatal termination was almost apparent. This case was controlled by the internal medication of adrenalin chlorid, 1-1000 in thirty minim doses, four times daily, and the application of *x*-ray directed to the splenic substance. The spleen has been reduced almost to its normal size and the patient has continued up to the present time in good health. Cases have been reported in which even in simple anemia, with hypertrophied spleen, splenectomy has been done, and following this death has occurred from hemorrhage, patients succumbing within a period of from three to seven days following operation. A thorough diagnosis must first be made and then an endeavor to relieve these conditions by other methods before attempting splenectomy.

Dr. McDaniels, San Antonio, reported the case of a woman from whom he removed the spleen six years ago and who has since borne children and remained well.

Dr. W. Jepson, Sioux City, Iowa, said that in considering affections of the spleen from the standpoint of the necessity of removal of that organ, he thinks these can be classified under several headings. First, those affections which are primarily of this organ, as for example; sarcoma, carcinoma, various forms of cysts, tuberculosis and miliary abscesses. Under this heading may also be classed injuries and displacements of the spleen. Second, affections of the spleen which are secondary to pathologic processes located elsewhere in the economy, as for example: the splenomegalies of malaria, leukemia, splenic leukemia, etc. The first class of cases cited demand splenectomy because the pathologic process can not be otherwise satisfactorily dealt with. In the second class of cases, in which the splenomegaly is secondary to a primary process located elsewhere, splenectomy can hardly, in his opinion, be justified, except on the ground that the spleen is of such a size as seriously to impair the function of other intra-abdominal viscera. As an ovarian cyst or other intra-abdominal tumor, by reason of its size, may jeopardize the life of the patient, so in a similar manner may the enlarged spleen threaten health and life and when such is the case it would constitute a just reason for its removal. As our knowledge of the spleen is not definite, it would seem that care should be exercised against sacrificing this organ unless the indications for so doing are very clear, even though a large list of splenectomies show apparently perfect health after. Dr. Jepson said that in one splenectomy the blood changes consisted of a fall of red corpuscles from above 5,000,000 before the operation to 3,300,000 the day following the operation and it was only after three weeks that the number reached approximately 4,500,000. During this time the whites increased from 6,000 to 27,000. In another case of splenectomy, in a case of Banti's disease, the blood changes were somewhat similar as regards the red corpuscles but he could not recall with certainty the exact changes. He had interpreted the diminished number of red corpuscles as possibly being due to blood loss which, however, was slight in each case.

Dr. Jefferson D. Griffith, Kansas City, stated that he has operated in several of these. One operation was for hernia of the spleen in a child six years old. The spleen had escaped, following a severe attack of whooping cough, and when the child was brought to him he did not know what was the matter. There apparently had been very few symptoms other than fretfulness. On cutting down he encountered a large body which proved to be the spleen. It was lying well down and was not strangulated. After ligating the vessels he took it away; the child made an uneventful recovery. The parents have since told him that the child's whole disposition has changed. The case occurred ten years ago and in the meantime the child's disposition and temperament, which before the operation were phlegmatic, have now grown to be rather nervous and vicious.

Dr. W. A. Bryan said that he has appended to his paper a list of the cases that he has been able to collect of non-parasitic cysts. There was one of dermoid, 12 of cysts classified as simple or serous, 24 of cysts classified as hematic or blood, and 4 that were not definitely classified. There are 41 cases of non-parasitic cysts of the spleen so far recorded, but only 12 have been classified as simple. If these 12 could be analyzed it would be found that many of them should be classified with the blood cysts. Simple serous cysts are exceedingly rare. The danger of splenectomy is a great deal larger in those cases in which the spleen is functionating than it is when the function has disappeared. In the case reported by Dr. Bryan the cyst and spleen together weighed two and a half pounds, but there was not more than one and a half ounces of real spleen tissue.

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* A report of this case was published in the Journal of the Missouri Medical Association, July, 1905.

Dr. B. B. Davis stated that he has looked over the literature on removal of the spleen and in practically all the cases of splenectomy done on animals for experimental purposes and cases of splenectomy done for rupture, the operation has been universally followed by a decrease in the reds. In the few cases in which splenectomy has been followed by an increase in the reds there has been some reason for it. In a case reported by Harris some years ago the condition had been present for years. In such cases Dr. Davis believes that the vicarious function carried on by the bone marrow becomes established and this affects the blood formation. He said that if Dr. Harris will look up the literature he will find that it will bear out the statement that the removal of the spleen does reduce the number of red blood cells. The very fact that in these cases, in which there has been a careful study beforehand, the removal of the spleen has been followed by restoration to health shows that the splenomegaly is the primary lesion. It will not be possible to put this class of cases along with the case of which Dr. Jepson spoke. In primary splenomegaly there is a secondary cirrhosis of the liver, and ascites. Operation should be done in these cases before these complications arise, as the patients are very likely not to be helped by the operation.

ACID INTOXICATION, AND LATE POISONOUS EFFECTS OF ANESTHETICS.

HEPATIC TOXEMIA. ACUTE FATTY DEGENERATION OF THE LIVER FOLLOWING CHLOROFORM AND ETHER ANESTHESIA.*

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AND
HENRY BAIRD FAVILL, M.D.,
CHICAGO.

In January, 1905, there occurred in our practice a case of gangrenous ovarian cyst with twisted pedicle. The patient was operated on and the case terminated fatally four days and a half later. The clinical picture was a very unusual one. Although we were aided in the conduct of the case by four consultants, a gynecologist, an internist, a neurologist, and a pathologist of more than ordinary ability, no definite diagnosis of the cause of the singular symptoms could be made. The parents of the child, fortunately, were intelligent and considerate and, realizing the importance to humanity and to science of ascertaining the exact cause of death, as the first step to the prevention of a similar result in other cases, permitted a postmortem examination. This was made with the greatest thoroughness, gross, microscopic and bacteriologic, and yet even then the cause of death was obscure and remained so until a careful review of the literature enabled us to collect twenty-nine more or less scattered cases, either identical or very similar to our own, in the light of which we believe the diagnosis becomes clear. We have found also certain comparatively recent experimental work reported, which assists materially in the understanding of the case.

DR. FAVILL'S REPORT OF CASE.

We shall cite first the outline of our experience, which it seems worth while to report, first, because of its essential importance as a positive clinical picture; second, because of its value with respect to negative demonstrations.

Patient.—A girl, aged 12½ years, with the stature of a woman and the mental development of a girl of 16 or 18. Not at all a "freak," but simply a noticeably handsome, well-developed and intelligent girl. She menstruated at the age of 11½ and was reasonably regular thereafter.

History.—Her history as to illness is negative. At 3 she had an acute otitis media which was treated by puncture, under chloroform, and recovered promptly and permanently; since that time no illness of any consequence, though she was of a lithemic type.

January 17: She came home from skating, complaining of great pain in the lower abdomen. Her menstruation being due, though it was habitually painless, her pain was ascribed to that fact. The pain was very severe. When seen two hours later it was somewhat less, but still severe. Temperature, 98.4; pulse, 72; general abdominal tenderness, but absolutely no local increase. The appendix was excluded and the conclusion as to premenstrual pain adopted. Some whiskey was given her, which she vomited.

A nurse was called; the child was covered with a flaxseed poultice on the lower abdomen, given small doses of phenacetin at intervals and saline cathartics.

January 18: In the morning her temperature was normal, but she was still in some pain. Temperature in the evening was 99. She had a comfortable day and began to menstruate at 11 p. m.

January 19: Thursday was an uneventful day; very little pain, no abdominal distension and very little tenderness; the bowels moved twice slightly; temperature at 5 p. m. was 99. She vomited some orange juice at noon; she was cheerful and feeling well, however.

January 20: Friday she was still in pain; temperature, 100.5. Inasmuch as the menstrual conditions did not seem to justify any increase of symptoms, suspicion was aroused; a blood count showed 11,600 leucocytes. Dr. Bevan was called in consultation. Temperature gradually rose and slight tenderness developed in the neighborhood of the appendix. At 2 o'clock the temperature was 102.2, leucocytes 14,000. Free bowel movement. At 9 p. m. the temperature was 102.6, pulse 108, leucocytes 16,500. Dr. Webster was called in consultation.

A diagnosis of appendicitis was fully agreed on and an operation was performed about midnight.

Previous to the operation a thorough pelvic examination was made bi-manually by rectum, but no palpable abnormality was found.

Operation.—The operation was performed under chloroform, and it is noteworthy that it took a long time and an unusually large amount of chloroform to establish anesthesia. The exact amount of chloroform, however, was not noted at the time, but it is clear that in both respects the anesthesia was noticeable.

Because of some rather definite sense of resistance under the right rectus muscle, just above the pubes, the incision was made through the right rectus. The peritoneal cavity was opened and the appendix was found injected and buried in lymph directly under the incision. It was removed and the stump invaginated in the ordinary way. On separating the coils of intestines which surrounded the appendix, a black mass was seen. At first glance this was thought to be a gangrenous bowel, but on separating the intestines a gangrenous ovarian cyst and tube of the left side were brought into view. The intestines in contact with the mass were covered with a thin layer of lymph. There was no pus. The pedicle was ligated proximally to the point of torsion and the dead mass removed; the abdomen was closed without drainage. No time was lost in any way, and although the exact time was not noted, the operation was a rather short one.

Postoperative History.—From the time of operation till death, the dressings were not removed from the wound. The abdomen was flat, soft and painless, and there were absolutely no evidences of peritonitis.

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* Read in the Section on Surgery and Anatomy of the American Medical Association, at the Fifty-sixth Annual Session, July, 1905.

The patient was returned to bed in excellent condition; temperature 101.6, pulse 102, and thoroughly conscious at 1:45 a. m. The succeeding hours were unusually comfortable. The temperature steadily fell until Saturday at 11 a. m., when it was 99.8; pulse 86; respiration 23, and leucocytes 12,000. The patient had a very comfortable day; temperature 101.2 at 4 p. m.; she vomited a trifle at 7 p. m., and flatus was expelled freely.

January 22: Sunday, at 8 a. m., the temperature was 98.6; pulse 100. She slept more or less during the night, vomited a little and passed several slight stools. She complained of feeling hungry. She continued in this comfortable way all day Sunday. At 7 p. m. temperature was 99.2, pulse having risen to 112, and the mother noticed that the patient was not quite natural in her remarks. The attention of the physicians was called to this point, but the incident was so slight as to seem unimportant to them. At 11 p. m. the physicians were again called. The child was talking incoherently and exhibiting evidences of very great fright.

The picture of this mental condition is so unusual and from comparison with the experiences of others so typical that we venture to dilate on it. First, its appearance almost out of a clear sky. The child had been phenomenally favorable in her progress until forty-four hours after the operation. Second, the element of fright as the initial manifestation. Third, the rapid lapse into incoherence and unremitting delirium. Her first noticeable departure from the normal was at 8 p. m. on Sunday, and at 11 p. m. she gave the last obvious recognition of anybody. From that time on it was a series of alternations between sleep and delirium, more or less talkative, with a curious shrieking outcry. The delirium was controllable to a certain extent by small amounts of morphin hypodermatically, but except for that nothing seemed to affect her condition.

Consultation with Dr. Patrick.—Of course, the question of septic meningitis arose immediately. At noon on Monday, January 23, Dr. Patrick was invited into consultation. At that time there were present the following significant signs: Considerable muscular rigidity, exaggerated tendon reflexes, particularly patellar, ankle clonus and a perfectly marked Babinsky's reaction. Nevertheless, the consultation did not result in a clear diagnosis of meningitis.

Dr. Hugh T. Patrick's Statement.—From a neurologic standpoint the case presented several interesting and very instructive features.

First, the very early appearance of delirium without other symptoms of profound intoxication, and with no signs of organic disease. The rather quiet delirium of the confusional sort, with no definite tendency to depression or exaltation; no definite type of delusion or hallucination enabled one to exclude all of the ordinary psychoses. The varying indifference to surroundings, the occurrence of relatively lucid moments, and the well-marked impairment of recognition of time, location and personality placed the case in the class of toxic psychosis or delirium, as delirium tremens, Korsakoff's psychosis. Absence of all signs of gross organic disease allowed the provisional exclusion of meningitis, or brain abscess, consequently, a diagnosis of toxic delirium was made; source of toxemia undetermined.

Second, the appearance of ankle clonus and Babinski's sign or "extensor response" with corroborative evidence of gross brain or cord disease, was confusing. As is well known, Babinski's (or Collier's) sign indicates a lesion of the pyramidal tract. It is not to be elicited in every case of disease of this tract, but its presence in typical form is almost indubitable evidence of such disease. It is known, too, that this sign may be found in acute lesions, even a very few minutes after cerebral thrombosis or hemorrhage. Combined with delirium, another cerebral symptom, it would be taken to indicate a lesion or lesions of the cortex or subcortical tissue. Ankle clonus is also indicative of a lesion of the pyramidal tract, but is exceedingly rare in acute diseases, such as hemorrhage, thrombosis, inflammation. Occasionally it is found in rigid or hypertonic states due to compression of the motor cortex, as in meningeal hemorrhage. I do not recall having seen it well defined in acute meningitis, though I suppose it might be possible. So far as I know, neither Babinski's sign nor ankle clonus has been reported as due to intoxication without gross, or well advanced, microscopic disease. The eye grounds were negative.

Consultation with Dr. Billings.—Monday afternoon Dr. Billings was invited into consultation. The conditions were about the same, except that the pulse was steadily going up, and the temperature slightly, being 101.6, the pulse 130 and the respirations 21. There was also more or less suspicion of endocarditis and pericarditis, and it was suspected that the sepsis had invaded the cardiac structures.

Dr. Billings' Statement.—The symptoms indicated profound intoxication. There was coma, with marked congestion of the skin and of the mucous membranes, with moderate cyanosis and rapid heart action, irregular respirations, relaxed sphincter ani and retention of urine. At regular intervals a period of excitement, practically a convulsion, would occur, lasting one minute or perhaps longer. This was manifested by a deeper redness of the skin and mucous membranes, a tonic contraction of all the voluntary muscles, by gradually increasing respiration, both in number and depth of chest movements, by stertor, by a tumultuous beating of the heart, by dilatation of the pupils and, at times by escape of the fluid contents of the rectum. The tonic contractions of the muscles occurred with the extremities extended and the head drawn slightly backward, with the neck muscles rigid. In the early stages the forearms were alternately flexed and extended with the hands closed. The stage of excitement was followed by a longer period of quiet. During this time the respirations were quiet, slow, shallow and almost imperceptible. The heart beat rapidly, but not as forcibly as during the stage of excitement. The muscles were relaxed, the pupils equal and moderately wide. Physical examination of the chest showed no abnormal lung findings. The heart showed evidence of dilatation. The apex beat was displaced to the left and was diffuse. The left border dullness was one inch to the left of the nipple line, the base to the second rib, and the right border one inch to the right of the right sternal border. During the early stage no murmurs were heard. Soon a loud apical and basic systolic murmur could be heard during the period of excitement. During the last day systolic murmurs could be heard at all times and during the convulsive period, with the tumultuous beating of the heart loud churning murmurs were heard. During the last day a distinct to-and-fro friction could be plainly heard over the base of the heart. There can be no doubt that acute dilatation of the heart occurred. Postmortem contraction and rigidity of the heart muscle of course does not negative this statement.

Termination of Case.—The progress on the following day, Tuesday, was uneventful, the pulse remaining high much of the time, the temperature varying between 99.4 and 101.8, respirations between 22 and 28. Cheyne-Stokes respiration was present. The conditions continued without material change until Wednesday morning, when the temperature gradually began to rise; the pulse became very irregular and rapid, and finally death ensued at 2 o'clock, 110 hours after operation.

AUTOPSY.

The postmortem examination made by Dr. Hektoen at the expiration of seven hours revealed the following facts:

Anatomic Diagnosis.—Recent laparotomy; wound removal of vermiform appendix and of left ovary and tube; local purulo-fibrinous peritonitis about field of operation; retrocecal ecchymosis; thrombus of left ovarian vein; fatty changes in the liver; swollen spleen; chronic nephritis (minimum degree), with acute degeneration; multiple ecchymoses; edema and congestion of lungs; acute bronchitis; chronic fibrous peritonitis about right tube and ovary. Menstruation.

Macroscopic Examination.—The body is that of a well-developed, well-nourished girl. It is still warm and rigor-mortis is beginning. There is a recent sutured incision with normal margins to the right of the median line, beginning on a level with the navel and running down about 10 centimeters.

The general abdominal cavity is empty; in the pelvic portions there is some turbid blood; the omentum, ileum, cecum and sigmoid are matted together by a fibrinous exudate in the pelvis and behind the incision, the upper inner part of which is gaping, the margins here appearing somewhat soft and yellowish. The vermiform appendix is absent, the stump closed and water tight, with yellowish margins. The left tube and ovary are absent, the stump being sutured, the margins soft and yellowish. The left ovarian vein is closed by a red, quite firm, adherent clot. The right tube and ovary are embedded in firm, fibrous adhesions and flattened out beyond recognition against the bladder and wall of the pelvis. There is a large area behind the cecum sparsely infiltrated with blood.

The pleural and pericardial cavities are empty and smoothly lined. The lungs are somewhat congested and edematous, especially posteriorly. There is no bronchitis. The heart contains some blood; the endocardium is smooth; the muscle is firm; the intima of the aorta, vena cava and iliacs is smooth.

The spleen is large and quite firm; the Malpighian bodies are large and distinct. The liver is universally yellow, with no lobular centers; it is quite firm and larger than normal. The stomach is normal, with some softenings of the mucosa and some ecchymoses. The kidneys are large and firm, the capsules adherent in a few small places, the cortex thicker than normal, the markings not distinct; ecchymoses are present in the pelvis. The urinary bladder is normal; there are some ecchymoses in the mucosa.

The brain and its membranes are normal.

Microscopic Examination.—Kidneys: There are some chronic fibrous changes as shown by partial or complete obliteration of an occasional glomerulus and some, though slight, increased thickness of the capsules of many glomeruli. The most striking change is the presence of large amounts of granular material (coagulated serum) in the cavities of the glomeruli visibly compressing many of the tufts. The cells lining Bowman's capsules are not much changed. The convoluted tubules are filled with a similar granular material, while the epithelial cells are well preserved. There is marked congestion of the vessels.

Liver: There is an advanced fatty change at the peripheries of the lobules. The central portions are congested, the columnar arrangement of the liver cells is thrown into disorder.

Spleen: This organ shows great congestion; the follicles are cellular.

Lungs: There is great congestion in the posterior parts of the lower lobes; here the cells contain many blood corpuscles, some being crowded. Some of the bronchioles are filled with leucocytic exudate.

Heart: The heart shows no changes.

Internal Margins of Abdominal Incision: There is marked congestion and leucocytic infiltration, but no demonstrable bacteria.

Left Ovarian Vein: A recent red thrombus is present. There are no bacterial masses.

Bacteriologic Examination.—Two flasks of broth and two of ascites broth inoculated with 1.5 c.c. of blood withdrawn from the right elbow twenty hours before death remained sterile.

Cultures from the heart's blood, the liver and the spleen made at the autopsy remained sterile. Cultures from the peritoneal exudate gave *Streptococcus* and *Staphylococcus pyogenes aureus* in agar plates, in milk tubes and on blood-agar slants. The smears from the exudate showed only a few cocci.

Remarks.—It is to be noted that the local peritonitis was limited to the area from which the appendix and gangrenous cyst had been removed and that it was less marked at the time of postmortem than at the time of operation. Sections of the appendix and cyst showed streptococci and staphylococci.

Blood: The blood conditions during the postoperative period were as follows: The first day, Saturday, leucocytes 12,800, the second day, Sunday, not noted. The third day, Monday, 15,200, the fourth day, Tuesday, 14,800. Evidently not especially significant.

Urine: The urinary conditions were significant. The urine was examined before the operation and found to be negative. Following this examination it was examined frequently, and found on January 23, which was Monday, to be a highly concentrated urine, with an acidity of 11.6, containing diacetic acid, a trace of acetone and one and one-fourth (1.25) grams per liter of albumin, and a number of hyaline, granular and waxy casts. A subsequent examination on the same day showed less albumin, no acetone and less diacetic acid. The following day, Tuesday, there was still albumin, diacetic acid and a little blood. Later in the same day it was still highly acid, with less albumin, more diacetic acid and a great deal of blood. The same day, at 3:30 p. m., diacetic acid was absent; the other conditions were unchanged. Later, Tuesday, the conditions were the same, but with no diacetic acid. The next day, Wednesday, the urinary conditions were much the same; there was less blood and albumin and no diacetic acid. At 9 a. m., on Wednesday, the day of death, there was the same condition of nephritis, with no diacetic acid, but a great deal of blood.

It is to be noted that her breath on Tuesday and Wednesday had a sweetish, acetone odor.

Opinions of Physicians in the Case.—The opinions during the progress of this case were various. First, the assumption was that it was septic. Certain of the consultants had a reservation, feeling that it was some sort of autotoxic condition. A blood examination made by Dr. Hektoen during life was entirely negative.

The commentary of Dr. Patrick on the nervous manifestations particularly bearing on the question of meningitis is herewith included.

The deduction of Dr. Hektoen from his postmortem investigations is also included.

The deceptive signs indicating cardiac involvement with absolutely negative findings at autopsy are interesting.

The true nature of this experience has only unfolded itself gradually under the enlightening influence of the negative findings and an exhaustive study of the literature.

REVIEW OF LITERATURE.

There have appeared in the literature from time to time since 1846 and 1847—the years marking the introduction of anesthetics—the reports of a number of cases resulting fatally after operations, in which anesthetics were employed. These cases presented unusual symptoms, and postmortem findings which could not be attributed to the more common causes of death after operation, such as shock, hemorrhage, sepsis, pneumonia, uremia, etc.

A certain considerable number of these obscure cases, because of the identity of symptoms and postmortem findings, evidently belong to the same group and are certainly the result of the same obscure causes.

The cases to which I refer have been reported under several headings. Guthrie[1] reports nine fatal cases under the title, "Some Fatal After Effects of Chloroform on Children." Brewer[2] reports a similar case as "Fatal Acetonemia Following an Operation for Acute Appendicitis." Kelly reports these cases under the title of "Acid Intoxication; Its Significance in Surgical Conditions."

Brackett, Stone and Low[3] report this group under the title of "Aciduria (Acetonuria), Associated With Sudden Death After Anesthesia." Other authors have reported these cases as deaths due to acute yellow atrophy of the liver. Cohn[4] reports a case under title of "A Case of Protracted Effect of Chloroform, with Fatal Termination."

Stocker[5] reports a case identical with our own as one of acute yellow atrophy of the liver after the twisting of the pedicle of an ovarian cyst. Without doubt many of those deaths have not been correctly interpreted, and have been regarded as deaths due to late shock, fat embolism, sepsis, meningitis, uremia, etc.

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[1] Guthrie, L. G.: "Some Fatal After Effects of Chloroform on Children." Lancet, 1894, I, pp. 193-257.

[2] Brewer, G. E.: "Fatal Acetonemia Following an Operation for Acute Appendicitis." Ann. of Surg., 1902, xxxvi, p. 481.

[3] Brackett, E. G., Stone, J. S., Low, H. C.: "Aciduria (Acetonuria) Associated with Sudden Death After Anesthesia," Boston Med. and Surg. Jour., 1904, cli, p. 2.

[4] Cohn, Max. "Ein Fall von protrahirter Chloroform wirkung mit todtlichen Ausgange," Deut. Zeits. f. Chir., 1902, lxiv, p. 189.

[5] Stocker: Centralbl. f. Gynäkologie, 1895, No. 45.

Within the last year the evidence on this subject has accumulated rapidly, and it would seem that the time has arrived when the large number of clinical reports and the experimental laboratory findings have thrown enough light on this obscure subject to warrant an attempt to analyze the evidence at hand and to determine the essential cause of death, to describe the usual symptom-complex and to determine the postmortem findings of this heretofore little understood pathologic condition. Most of us, I believe, even those of us who have had a comparatively wide experience in surgery, have felt that after the giving of an anesthetic, if the patient recovered from its immediate effects, that there were no further dangers from the anesthetic, except such well-known dangers as pneumonia and nephritis, conditions which could be recognized readily by proper means of diagnosis. We have thought little about, and paid little attention to the possibility of late obscure poisonous effects of chloroform and ether which were difficult to recognize, and frequently fatal in termination. Yet as early as 1850, Casper[6] recognized the late poisonous effects of chloroform, and in 1862 said:

> It can no longer be doubted that there is such a thing as chronic poisoning by chloroform—that is, that the drug when it does kill does not always kill instantaneously, but that hours, days or even weeks may elapse during which the person anesthetized remains continuously under the influence of the poison to which he at length succumbs.

Experimentally, the truth of Casper's statement has been proved by a number of investigators. Nothnagel,[7] in 1866, proved that chloroform produced a fatty degeneration of the liver and heart muscle, when injected subcutaneously or into the stomach.

Ungar,[8] in 1887, showed that chloroform inhaled by animals as it is used as an anesthetic produces a fatty degeneration of various organs, especially of the liver, very similar to the fatty degeneration of the liver in phosphorus poisoning.

Strassmann,[9] in 1889, showed that animals weakened by loss of blood and then chloroformed showed a much more extensive fatty degeneration than those not so weakened.

In 1890, Thiem and Fischer[10] reported the first case in clinical work of a man who died four days after chloroform anesthesia, in whom the postmortem showed fatty degeneration of the liver.

Bastianelli,[11] in 1891, reported three deaths occurring in from three to ten days after chloroform narcosis, without any other apparent cause. These patients presented as symptoms: Vomiting, icterus, delirium and coma, and at postmortem in one case extensive fatty degeneration of the liver was found.

Fraenkel,[12] in 1892, reported cases with careful microscopic and macroscopic studies of the changes of the internal organs after protracted chloroform narcosis. In each case, he noted extensive changes in the liver cells, but did not attribute the death to these, as there [illegible] initely pointing to the liver. after [illegible]

Luther[13] in 1893 noted the occurrence of icterus.

Bandler,[14] in 1896, after a review of the literature up to that time, and a careful study of a case in Wölfler's clinic, came to the conclusion that chloroform under certain conditions can produce serious effects a long time after its inhalation. The effects on the heart and kidneys are well known and fairly generally recognized. The changes produced in the liver are little known and understood. He believes, however, that the liver is affected by chloroform used as an anesthetic in varying degrees from a scarcely perceptible lesion to an almost total destruction of the organ.

Bandler cites the fact that Nachod found bile in the urine after chloroform anesthesia, without any apparent icterus. He himself had found it in ten cases in which there was scarcely any evidence of icterus in the sclera. He believes that the evidence of the destructive effect of the chloroform on the liver cells is found in the cases of chloroform icterus, which are marked, but which disappear in a few days, with the recovery of the patient. He believes that the extreme degree of chloroform poisoning is found in the fatal cases of acute yellow atrophy of the liver which follow its use, an example of which he reports.

In the light of his investigation, Bandler believes that just as the heart and kidneys are carefully examined before the giving of an anesthetic, and their condition recognized as important in the choice of the anesthetic agent, so the condition of the liver, if possible, should be determined before the anesthetic, and when any liver lesion is found, chloroform should not be employed, but ether should be the anesthetic of choice, because, as he showed by animal experiments, ether does not produce the destructive effects on the liver cells found so constantly after chloroform anesthesia.

Offergeld,[15] in 1905, in an experimental study of the poisonous effects of chloroform on the kidneys, presents some most interesting results.

> Animals chloroformed for a long time (up to two hours), after recovery from the immediate effects of the anesthetic, seemed perfectly well, played about and ate. On the second day they were less lively, and not so hungry as usual. Later, they would lie down in the corner, and could be made to move about only with difficulty, and then they would at once lie down again; usually at the end of from 48 to 60 hours they were dead. A postmortem examination showed that in these animals—rabbits, guinea-pigs—after a single narcosis parenchymatous degenerations occur in the heart, liver and kidneys, which produce death after a short time, even though the animal has apparently stood the anesthetic well.
>
> In a second series of experiments it was shown (*a*) that fatty degeneration of the kidney did not occur in the kidney which had its arterial supply cut off by ligation of the renal artery after forty minutes' anesthesia; (*b*) that fatty degeneration of the kidney occurred in a most pronounced type after ligation of the renal vein, after thirty minutes' anesthesia; (*c*) that fatty degeneration occurred more rapidly after ligation of the ureter, even after twenty-five minutes' anesthesia.
>
> In a third series of experiments, in which an artificial nephritis had been produced, extensive injury was produced, even by fifteen-minute anesthesia.

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[6] Casper: Quoted by Guthrie, Lancet, 1903, No. II, p. 10.

[7] Nothnagel: Berl. klin Wochft., 1866, iii, 31.

[8] Ungar: Vierteljahrschrf. f. gerichtl. Med., 1887.

[9] Strassmann: Virchow's Arch., 1889, cxv, 1.

[10] Thiem and Fischer: Deuts. Medizinalzeit, 1889.

[11] Bastianelli, R.: "Sulla morte tardiva per chloroformio." Bull. della societe Lancisiana deglia Ospedali di Roma, June 22, 1890, p. 325. Abstract in Rev. de Sciences Med., 1892, vol. xxxix, p. 625.

[12] Frankel, E.: Virchow's Arch., 1892, Bd. 127, 129.

[13] Luther: Klin. Zeit. in Streit fragen, 1893.

[14] Bandler, v.: "Ueber den Einflusz der Chloroform und Aethernarkose auf die Leber." Mittiel. aus den Grenzgebeit der Med., 1896, Bd. i, p. 303.

[15] Offergeld: "Experimental Beitrag z. toxischen Wirkung des Chlororforms auf die Nieren." Arch. f. klin. Chir., 1905, vol. lxxv, p. 758.

In a fourth series the kidneys were injured by mineral acid and mercury, and then short—ten, fifteen and twenty-minute—anesthesias were found to be followed by death and the usual fatty degenerations.

In a fifth series the kidneys were injured by pus germs, and it was shown that a nephritis greatly favored fatty degeneration after chloroform narcosis.

In another group diphtheria toxins were injected into the animals, with the result that it was shown that the kidney inflammation produced by these poisons furnished an excellent soil for the development of fatty degeneration after chloroform narcosis.

In a sixth series, in which pregnant animals were employed, it was found that pregnancy in itself did not favor fatty degenerations, but that pregnancy complicated with kidney lesions did.

In a seventh series animals which had recovered from a previous short anesthesia were again chloroformed, and it was found that the fatty degeneration produced by the first anesthesia favored greatly the intense injury of the kidneys from a second anesthesia.

In an eighth series an effort was made to ascertain the effect of diet, and the conclusion was reached that after chloroform narcosis the urea in the presence of a nephritis is irregular in amount.

In a ninth series, after twenty-minute anesthesias on a number of animals on the same day, one was killed each day, and it was found that regeneration is possible.

In a tenth series the conclusion was reached that after chloroform narcosis fat disappears in the tissues and accumulates in the liver, so that the percentage of fat increases in the liver, while it decreases in the other organs.

In an eleventh series the conclusion is reached that the anesthesia produced by chloroform and oxygen does produce degenerative changes in the kidney, but only to a limited degree, and in a few days complete recovery follows.

Offergeld experimented a little with ether, but found that most of his animals died, even after from thirty to sixty-minute anesthesias, of pneumonia.

Offergeld believes that there is a certain idiosyncrasy in regard to chloroform and that some individuals can take amounts without injury which would produce extensive degenerations in another. He points out the importance of the knowledge that anemic and cachectic conditions of the patient favor the poisonous action of chloroform, and also the dangers of repeated anesthesias following closely one after the other.

Offergeld found constantly in his experiments that the most marked change at death was found in the liver. He came to the conclusion, however, that death is due to the production of a nephrolysin resulting from the effect of the chloroform on the kidney cells.

Offergeld believes that the prevention of this ill effect of chloroform may be accomplished by the use of a mixture of chloroform and oxygen.

Under the title of fat metamorphosis in the internal vital organs after simple and mixed narcosis, Benno Müller[16] this year reviews much the same ground. Müller made fifty animal experiments, with the usual anesthetics. His conclusions are as follows:

1. Anesthesia with chloroform, chloral hydrate, bromethyl and chlorethyl, ether and mixtures of these always produce changes in the internal organs, which appear as beginning fatty changes.

2. Fatty changes occur also in the epithelium of the respiratory tract.

3. The fatty changes in degree and extent depend on the time and number of the anesthesias.

4. The power of the various *anesthetics* to produce fatty changes is in direct proportion to their anesthetic power.

5. These fatty changes usually disappear shortly after the anesthesia. If a second anesthetic, however, is given before the fatty changes of the first have been recovered from, the effects of the second are enhanced and the cells become necrotic.

It makes little difference when the second anesthetic is given, the fatty changes after the second are twice as severe as from the first.

6. The anesthetic continues to produce fatty changes as long as it is present in the blood. The fatty changes can not go on to restoration to normal until the blood has freed itself from the last vestige of the drug.

7. It is hazardous to give a second anesthetic within three days after the first, and the anesthesia should be as short as possible.

8. Pneumonia occurs frequently after ether and ether mixtures; because of a possible pneumonia after a first ether anesthesia, one should choose chloroform for a second.

9. Each anesthetic produces after long use an increase in the mucous secretion. One finds in the lung after each anesthesia small areas filled with mucus (not infected pneumonic areas), which very soon disappear, but which are greatly increased by a second anesthesia inside of from twenty-four to forty-eight hours.

10. Chloral hydrate forms chloroform in the system.

11. The mixed anesthesias have no property of prevention of fatty changes in the internal organs.

12. Every anesthetic produces fatty changes in the vessel walls of the brain, and in the ganglion cells up to a certain stage and in the other internal organs.

THE CLINICAL SIDE.

With the assistance of Dr. Dean D. Lewis, we have collected from the literature 27 fatal cases after anesthesia, making with our own 28, which from symptoms and postmortem findings belong, we believe, to the same group. In two cases reported in the literature the patient recovered:

Bastianelli reported 3 cases; Bandler, 1 case; Ballin, 1 case; Brackett, Stone and Low, 3 cases; Brewer. 1 case; Cohn, 1 case; Erlach, 1 case; Guthrie, 14 cases; Kelly, 1 case; Marthen, 1 case; Stocker, 1 case; Mintz, 1 case; Bevan and Favill, 1 case. Total, 30. Chloroform was employed in 23 cases; ether in 4 cases; Billroth mixture in 1 case; not stated, 2 cases. Total 30.

We summarize below the essential facts in each case:

Bastianelli,[11] in 1890, reports 3 cases in which death occurred on from the third to the tenth day following the use of chloroform. In two of the patients vomiting was frequent and profuse. The patients were icteric and restless. Just before death they became comatose. Autopsy revealed a fatty degeneration of the heart, kidneys and liver. The fatty changes in the latter organ were most marked in the center of the lobule and resembled closely those found in other poisoning, especially phosphorus.

The original article was not accessible, and no statement can be made concerning the age, sex and predisposing causes.

These are probably the first cases reported and published of true late chloroform poisoning. Thiem and Fischer published somewhat earlier the autopsy findings in a patient dying four days after chloroform, but this case must be accepted with some reserve, as it is regarded by Fraenkel as delirium tremens.

Guthrie, in 1894, reports the clinical histories of ten patients; nine died and one recovered. The autopsy findings in eight fatal cases are given:

Case 1.—Male child, aged 3, under the care of Mr. Watson Cheyne, was operated on in 1887 for vesical calculus. There were no predisposing causes. Chloroform was used as an anesthetic. Two and one-half hours after the operation the child was restless. Vomiting was noted at this time. Eight hours after operation the child repeatedly uttered piercing shrieks, tossed about in bed, and was sweating profusely and was cold.

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[16] Muller, B.: "Ueber Fettmetamorphose in den inneren farenchym lebens wichtige Organen nach Einfachen u. Much narkosen." Archiv. f. klin. Chir., 1905, No. lxxv, p. 876.

Death occurred suddenly ten hours after operation. Screaming continued until a few hours before death.

Autopsy.—Lungs and liver normal; spleen slightly enlarged; kidneys, both in early stages of granulation, congested; capsule somewhat adherent. Brain congested, but no evidence of inflammatory changes in meninges.

Case 2.—Female child, aged 7, under the care of Mr. Stanley Boyd. Anemia possible predisposing cause. An excision of the knee joint was done under chloroform anesthesia. The carbolic acid spray was used. Patient was collapsed after the operation. Four and one-half hours after the operation the child began to vomit incessantly. Shrill screams were uttered. the restlessness finally passed into coma, and death resulted twelve hours after the operation.

Autopsy.—The pelves of both kidneys contained pus. All other organs appeared normal.

Case 3.—Female child, aged 4, under the care of Mr. Watson Cheyne, was operated on for double genu valgum. Chloroform was used as an anesthetic. The operation lasted about one hour. No predisposing causes. Vomiting commenced about five hours after operation. The child became delirious; the delirium alternating with apathy. Child screamed constantly. Temperature rose to 102, just before death, which occurred twenty-seven hours after operation.

Autopsy.—The liver was found somewhat pale and greasy. Kidneys and spleen were normal. The heart muscle was pale, but not fatty. There was considerable venous congestion in the brain; otherwise normal.

Case 4.—Male child, aged 1 year 4 months. Service of Mr. Watson Cheyne. Carbolic-acid intoxication may have been predisposing cause. Operation was done for congenital hydrocele under chloroform anesthesia. Lengthy operation. Excessive vomiting was noted soon after operation. Death occurred twenty-four hours after completion of operation.

Autopsy.—Liver large, firm and pale. Microscopically, fatty infiltration.

Case 5.—Male child, aged 4. Service of Mr. Stanley Boyd. Operation for correction of double talipes equino varus, resulting from infantile paralysis. Chloroform anesthesia. Symptoms began thirteen hours after operation. Vomiting was frequent and profuse. Child soon became unconscious. Just before death temperature rose to 101. Death occurred thirty hours after operation.

Autopsy.—Liver small, weighing 14½ ounces; microscopically, two-thirds of the external portion of the lobule was fatty. There was intense fatty infiltration, perhaps unaccompanied by fatty degeneration.

Case 6.—Female child, aged 8. Service of Mr. Stanley Boyd. Carbolic-acid intoxication was possible predisposing factor. Operation for double genu-valgum; lasted one hour and ten minutes. Chloroform anesthesia. The symptoms were vomiting, restlessness and coma. Death occurred fifty-three hours after anesthetic.

Autopsy.—Liver small, weighing 1 pound 3 ounces.

Case 7.—Female child, aged 4, well nourished and apparently healthy. Service of Mr. Stanley Boyd. Chloroform anesthesia; chloroform taken badly. Iliac abscess was opened and 2 ounces of 10 per cent. iodoform glycerin emulsion were injected. Collapse after operation. The symptoms were incessant vomiting; child either apathetic or extremely restless and delirious. Carboluria noted. Death occurred six days after operation. Temperature shortly before death reached 104.6.

No autopsy permitted.

Case 8.—Female child, aged 2. Service of Mr. Watson Cheyne. Child was apparently in good health; iliac abscess was opened under chloroform. Anesthesia lasted about fifteen minutes, and one-half ounce of chloroform was taken well. Twelve hours after operation the child was dull and apparently in shock. Death occurred fourteen hours after operation.

Autopsy.—Peritoneum congested. Some fluid found about abscess. "No apparent cause of death."

Case 9.—Female child, aged 8½. Service of Mr. Watson Cheyne. No predisposing cause. Psoas abscess was opened under chloroform and irrigated with 1-4,000 bichlorid solution. The child was pale and restless after operation. The symptoms were severe abdominal pain, nausea and vomiting; diarrhea with some blood in stools. Temperature 95.8. The symptoms persisted for three days, then abated, and recovery followed. Judging from the character of the symptoms and the use of bichlorid in the operation, it seems that mercurial poisoning should be considered in this case.

Case 10.—Female child, aged 4. Service of Mr. Pollard. Operation under chloroform for double psoas abscess and spinal caries. Operation lasted about one hour. Symptoms were noted four hours after operation. Child was very restless, calling for water; flushed; pulse full. Sixteen hours after operation child was restless, with wild look; temperature 103. Death occurred sixteen hours after operation.

Autopsy.—Liver large and pale; fatty on section. Kidneys soft and pale (postmortem). Tuberculous glands about root of lung; one had ulcerated into root of lung. Calcareous tubercles in lung. Caries of body of third lumbar vertebra.

(To be continued.)

OSSIFICATION OF THE LOWER JAW IN MAN.*

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From the fact that there are so many different accounts given of the ossification of the lower jaw, it is evident that the question is in need of reinvestigation. Nothing more recent than Bland-Sutton's account seems to have been published on the subject, and that is based on work apparently done in 1883[1] and, as will be seen, it can be by no means considered conclusive.

It is necessary to state the various accounts as the recognized text-books give them in order to appreciate the great diversity of opinion which exists.

If we begin with Quain, we find the following statement:

> The largest part of each half is formed from a deposit (dentary) in the membrane on the outer side of Meckel's cartilage, and to this there is added a second smaller plate (splenial) which forms the inner walls of the tooth sockets, terminating behind in the lingula. A small part of the body by the side of the symphysis results from the direct ossification of the anterior end of Meckel's cartilage; and, posteriorly, the condyle and a portion of the ramus, including the angle, are developed from another ossification in cartilage.

Macalister[2] says:

> One center of ossification begins in the embryonic tissue around Meckel's cartilage on the thirty-eighth day. A supplemental patch of cartilage appears in this tissue at the angle and a second at the condyle. Centers of ossification, condylar and angular arise in each of these patches, and a third in the median end of Meckel's cartilage; a fifth or splenial center arises in the lingula. These all very rapidly unite, so that by the fourteenth week but one bony mass is present on each side.

Kollman,[3] who quotes Toldt,[4] Stieda[5] and Schafer,[6] says that the anlage of the lower jaw can be seen in an embryo of 30 mm. from neck to tail. The ventral site of union of both Meckel's cartilages is surrounded by bony lamellæ which arise, not out of cartilage, but out of mesoderm and develop upward, following Meckel's cartilage. They form at the side two bony lamellæ, which come together dorsally, and between the lamellæ runs the inferior dental nerve. Further upward, the bone becomes thinner, to again thicken in the neighborhood of the auditory capsule. There are few places where one can so clearly observe the independence of covering bone from that arising from cartilage. Further, the origin of the jaw becomes complicated through the appearance of hyaline cartilage, which arises secondarily, quite independently of Meckel's cartilage. This occurs in the region of the median incisor tooth from the upper external alveolar border as far as the region of the canine tooth and on the coronoid and condyloid processes.

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* Read in the Section on Stomatology of the American Medical Association, at the Fifty-sixth Annual Session, July, 1905.

1. Trans. Odont. Soc.
2. Text-book of Anatomy, p. 242.
3. Entwickstungsgeschichte des Menschen, p. 261.
4. Toldt: Zeitft. d. Heilk. Vol. v, 1884.
5. Stieda: Arch. f. mikroskop. Anat., vol. ii, 1875.
6. Schaffer: Arch. f. mikroskop, Anat., vol. xxxii, 1888.

In the fetus of from 15 to 18 cm., only traces (of cartilage) are present, and these accessory nuclei have only a provisional significance. They atrophy, owing to the formation of new bony tissue, just as does Meckel's cartilage. Fresh researches are required to determine whether these ossifications have any phylogenetic meaning.

In "Gray's Anatomy," in the article edited by Howden, the following statements are made:

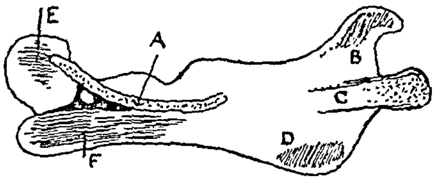

Fig. 1.—Scheme after Sutton. E. Mento-Meckelian center. F. Dentary. A. Splenial. B. Coronoid. C. Condyle. D. Angular.

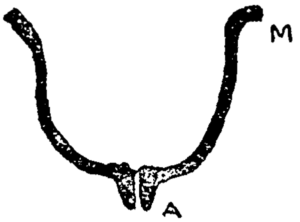

Fig. 2.—Scheme of Meckel's cartilage: M, malleus end; A, anterior end.

> The lower jaw is developed principally from membrane, but partly from cartilage. The process of ossification commences early, earlier than any other bone, except the clavicle. The greater part of the bone is formed from a center of ossification (dentary) which appears between the fifth and sixth weeks in the membrane on the outer surface of Meckel's cartilage. A second center (splenial) appears in the membrane on the inner surface of the cartilage, and from this center the inner wall of the sockets of the teeth is formed; this terminates above in the lingula. The anterior extremity of Meckel's cartilage becomes ossified, forming the body of the bone on each side of the symphysis. Two supplemental patches of cartilage appear at the condyle and at the angle, in each of which a center of ossification for these parts appears; the coronoid process is also ossified from a separate center. At birth the bone consists of two halves united by a fibrous symphysis in which ossification takes place during the first year.

In Cunningham's "Text-book of Anatomy," p. 141, we find it stated that:

> The development of the lower jaw is intimately associated with Meckel's cartilage, the cartilaginous bar of the first visceral or mandibular arch. Meckel's cartilages, of which there are two, are connected proximately with the periotic capsule and cranial base. Their distal ends are united in the region of the symphysis. It is from the connective tissue overlying the outer surface of the cartilaginous arch that the bulk of the lower jaw is developed. The cartilage itself is not converted into bone, but undergoes resorption, except at its anterior extremity, which is stated to undergo ossification to form the part of the jaw lying between the mental foramen and the symphysis. In a third or fourth month fetus, the cartilage can be traced from the under surface of the forepart of the tympanic ring downward and forward to reach the jaw, to which it is attached at the opening of the inferior dental canal; from this it may be traced forward as a narrow strip applied to the inner surface of the mandible which it sensibly grooves. The proximal end of this furrow remains as the mylo-hyoid groove. The part of the cartilage between the tympanic ring and the jaw becomes converted into fibrous tissue and persists in the adult as the so-called internal lateral ligament of the temporo-maxillary articulation, its proximal end through the Glaserian fissure being continuous, with the slender process of the malleus. The part which is applied to the lower jaw disappears. In the tissue overlying the cartilage ossification begins by several centers as early as the sixth or seventh week of fetal life, in this respect resembling the clavicle, by which it is alone preceded. The dentary or basal center forms the outer wall and lower border. With this is united the splenial portion, which appears somewhat later, forming the inner table from near the symphysis backward, toward the opening of the inferior dental canal, where it terminates in the lingula. By the union of these two parts a groove is formed, which ultimately becomes covered in, and in which the inferior dental nerves and vessels are lodged. As has already been stated, the part of the body between the symphysis and the mental foramen is regarded as directly developed from the forepart of the Meckelian cartilage. As will have been gathered from the above description, the upper part of the ramus and its processes have no connection with Meckel's cartilage; the condyle and the coronoid process are each developed from a separate center, preceded by a cartilaginous matrix. These several centers are all united about the fourth month.

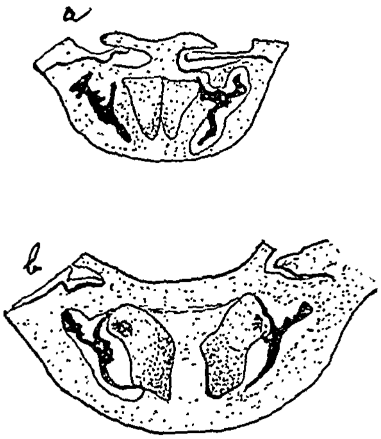

Fig. 3.—(a) Coronal section of anterior end of Meckel's cartilage. (b) Coronal section a little behind anterior end of Meckel's cartilage.

Sappey[7] describes very carefully Meckel's cartilage and, in addition, gives an account of the ossification of the lower jaw. He says:

> The lower jaw appears at the commencement of the second month of intrauterine life in the form of a small ogival arch, composed of two symmetrical and continuous halves. This arch of parabolic figure constitutes the cartilage of Meckel. . . . Situated on the internal face of the bone below the mylo-hyoid ridge, Meckel's cartilage presents the appearance of a long ribbon extended between the symphysis and the front of the tympanum. By their internal extremities the two cartilages are continuous; they form thus an arcade of which the median part sends a prolongation between the two halves of the maxilla. Their external extremity projects be-

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[7] Fourth edition, 1888, p. 241.

yond the corresponding bony part and applies itself to the anterior part of the tympanic ring and penetrates into the cavity of the tympanum. . . . Ultimately Meckel's cartilage disappears, first in its intermediate part, then at its anterior extremity; only the posterior part remaining as the malleus and incus. In front of the cartilage of Meckel appear two centers of ossification in a cartilage not well known, one right, the other left, toward the thirty-fifth day. They extend *rapidly along the whole length of each half of the bone.*

Testut,[8] who quotes from Kolliker, Brock, Masquelin[9] and Julin,[10] says that the lower jaw is primitively *double, that each half is developed quite independently* of the other, and that the bone which covers it does so just as the bones of the membranous cranium cover the primitive chondrocranium. He states, too, that the osseous condyle is preceded by a cartilaginous condyle. Thus, each half is a mixed bone, developing partly from embryonic connective tissue and partly from pre-existing cartilage. Agreement on this point is not complete and the method of development of the mandible, especially that of the condyle, requires new researches.

Testut states that, according to Rambaud and Renault, each half of the jaw has six ossific centers visible from the fiftieth day of intrauterine life.

1. The inferior point (visible at the thirtieth or thirty-fifth day), a small train of osseous granules, situated toward the inferior border of the bone.

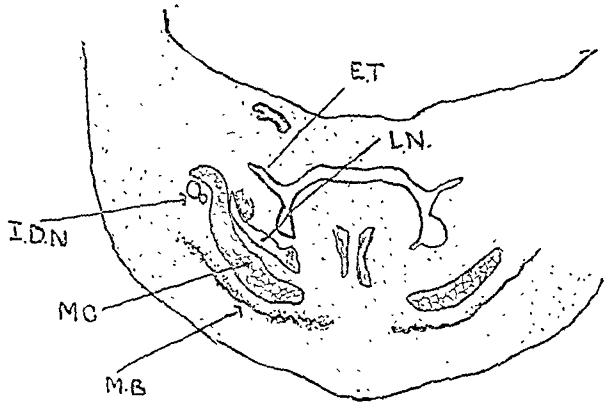

Fig. 4.—(Harvard collection, 852, H., 129) Horizontal section of 21 mm. embryo. M. C. Meckel's cartilage; I. D. N., inferior dental nerve; L. N., lingual nerve; E. T., Eustachian tube; M. B., membrane bone.

2. The invisive point, situated on each side of the symphysis in the region which the incisors will occupy later.

3. The supplementary point of the mental foramen, which helps by its inferior surface to form the mental foramen.

4. The condyloid point, which will form the condyle and subjacent portion of the ramus.

5. The coronoid point, out of which will develop the coronoid process and the portion of the ramus which forms its base.

6. The point forming the spine of Spix, situated on the posterior surface of the bone from the superior orifice of the future dental canal as far as the incisive piece.

According to Cruveilhier.[11]

The inferior maxilla is developed by two points of ossification, one for each lateral half. Autenrieth admits, in addition, three complementary points, one for the condyle, one for the coronoid process and one for the angle, but I have never observed them. The case is different, however, with a point of ossification described and figured by Spix, which forms the inner side of the alveolar border or rather of the dental canal. In a fetus of about fifty or sixty days, I have seen a kind of bony spiculum which passed along the internal surface of the body and ramus of the bone. On one-half of the maxillary bone this spiculum was entirely free, but that of the other side adhered by the internal third of its length. The spine which surmounts the dental canal is nothing more than the extremity of this bony spiculum. It follows, therefore, that the inferior maxilla is developed from four points of ossification. The inferior maxilla takes precedence of all the bones of the head in its development and, indeed, of all the bones of the skeleton, except the clavicle. The inferior edge of the body of the bone appears as early as the thirtieth or thirty-fifth day. This extends backward to form the ramus and forward to form the portion which supports the incisor teeth. It is probable that the osseous point of the dental canal, mentioned above, appears at the same time. At a later period the groove becomes very considerable and is divided into alveoli by septa which at first are incomplete, but afterward become perfect; the alveoli and their septa occupy at this time *the entire depth of the bone.*

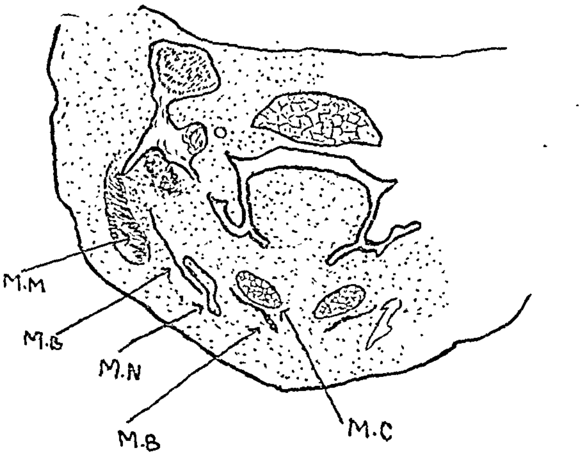

Fig. 5.—(Harvard collection, 852, G., 112.) Horizontal section of 21 mm. embryo. M. C., Meckel's cartilage; M. N., mental nerve; M. B., membrane bone; M. M.

The point of ossification described by Spix is united to the rest of the bone from the fifteenth to the sixteenth day. (Spix affirms that it remains separate until the fourth month.) The two halves of the maxilla are joined together during the first year after birth, the traces of this union exist for some time, but are afterward effaced in the lower animals; the suture remains throughout life.

According to Humphry,[12] "ossification commences in the membrane from which the inferior maxilla is formed at a very early period, from the thirtieth to the thirty-fifth day, according to Beclard. Soon after two months, it is considerably advanced. The bone is then in two halves, united in the median line by membrane. In each of these halves, the condyle, coronoid portion and angle are quite evident, the mental part is of considerable size, and there is a lamina appended to the inner side of the ramus, which, shooting upward, forms the inner wall of the dental groove and dental canal. The appearance of the several parts at this early stage certainly gives countenance to the supposition that each of them had a separate ossifying nucleus, corresponding, or nearly corresponding, with the five pieces into which the jaw of the crocodile is permanently divided; that is to say, one for the under and outer part of the ramus, another for the inner alveolar border, a third for the coronoid process, a fourth for the condyle, and a fifth for the angle. If it be so, they become united very quickly after their formation. The probability, however, is that in this bone, as in the upper jaw, there is usually only one nucleus on either side and that the various processes are merely outgrowths; the instances in which the latter are developed from the separate nuclei being exceptional.

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[8] Third edition, p. 197.

[9] Bull. Acad. Soc. de Belgique, 1878.

[10] Arch de Biol. de Van Beneden, 1880.

[11] Vol. 1, 1841. Transl. by Dr. D. H. Madden, edited by A. Tweedie.

[12] A Treatise on the Human Skeleton. 1858, p. 290.

Kerkringius[13] describes the coronoid process as consisting, up to the third month, of an ossicle, separated by a suture from the rest of the maxilla. Beclard mentions, in addition to the nucleus for the ramus, which appears from the thirtieth to the thirty-fifth day, a nucleus for the coronoid process, which appears about the forty-fifth day. Autenrieth and Spix[14] describe also a nucleus for the condyle and one for the angle, to the probability of which Beclard gives assent. According to Spix, the inner wall of the jaw is derived from a separate nucleus. Blandin[15] found the body, the coronoid process and the hinder part of the bone separate from one another in a fetus of three months. As growth proceeds, the inner lamina of the ramus rises nearly to the same level with the outer and forms the inner alveolar border; the dental groove is deepened:

> Near the coronoid process the inner lamina joins the outer, arching over and enclosing the dental foramen and the hinder part of the dental canal. The latter is at this time a mere channel in which the nerves and vessels lie, at the bottom of the dental groove, in the greater part of its extent.

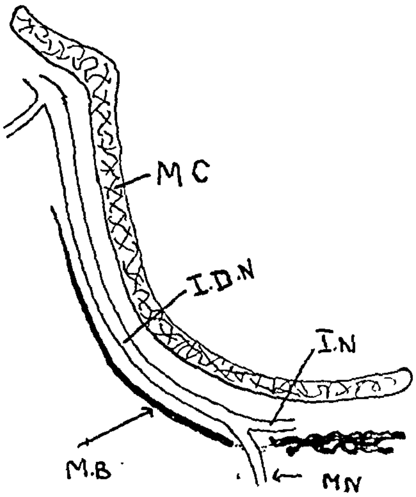

Fig. 6.—Schematic horizontal section of Meckel's cartilage; the inferior dental nerve. I. D. N., and the membrane bone, M. B. M. C., Meckel's cartilage; M. N., mental nerve.

Cleland[16] says:

> The lower jaw is, next to the clavicle, the earliest bone to show osseous deposit. It is developed round Meckel's cartilage, mainly outside of it, but additional centers have been noted at the lingula, at the angle, at the coronoid process and at the condyle. The condyle is laid down in cartilage before its ossification begins, but the supposition that Meckel's cartilage is in any part converted into osseous tissue of the jaw is erroneous.

Holden[17] says:

> Each lateral half of the lower jaw is represented in the early fetus by what is called the "first visceral arch or cartilage of Meckel." In the process of development, the proximal part of this cartilage is converted into the "malleus" bone of the middle ear. The distal part, mostly by the growth of bone round the cartilage, but slightly by a direct ossification of the cartilage itself, is converted into one-half of the lower jaw. The part between these two end portions becomes the "internal ligament" of the temporomaxillary articulation. The bony lower jaw begins to be formed, with perhaps the exception of the clavicle, earlier than any other bone in the body. For each of the lateral halves of the bone, we find that several osseous nuclei appear about the sixth week of fetal life in the membrane which invests Meckel's cartilage. The smaller plate forms the inferior dental canal and the inner wall of the sockets for the teeth. The symphysis end of each half of the body is formed by a direct ossification of the corresponding part of Meckel's cartilage. The condyle and part of the vertical ramus are formed by ossification of cartilage not connected with Meckel's, and the junction of the two lateral halves of the body at the symphysis does not take place till the first year after birth.

In 1883, Bland-Sutton[18] published a paper giving a very excellent and concise résumé of the work which had already been done on the subject and also giving the results of his own observations. He says:

> The examination of numerous specimens of human maxillæ from the sixth week onward has convinced me that the lower jaw arises from six distinct centers of ossification, five of them answering exactly to those described by Spix, the sixth representing the mento-Meckelian center of Callender.
>
> So far as I have been able to observe, the nucleus marked F. in Figure 1 is the first to appear; from this center the larger part of the body of the bone is formed. At first it resembles a shallow trough lodging the cartilage.
>
> The nuclei for condyle, coronoid and angle follow so rapidly that it is difficult to determine their order. About the same time, osseous granules may be seen in the perichondrium surrounding the distal end of Meckel's cartilage, gradually invading its substance.
>
> As soon as the various centers make their appearance, a thin network of osseous tissue quickly connects them. When this occurs a thin shelf of bone will be found immediately above Meckel's cartilage and the inferior dental nerve. This latter osseous streak lies on the inner side of the developing bone, quite distinct from the other centers, and represents the splenial. Now is the very best time to observe the various nuclei, particularly if the bone is rendered transparent by means of alcohol and oil of cloves. Its appearance is very striking. The bone presents the familiar shape of the fetal jaw, but its texture reminds one of a spider's web, the various centers showing like flies entangled in the mesh. (Fig. 1.)
>
> The order of events may be arranged in stages for the sake of clearness thus:
>
> 1. Meckel's cartilage appears.
> 2. Dentary is seen below.
> 3. Centers for condyle, coronoid, angle and mento-Meckelian.
> 4. Network of osseous tissue connects them together.

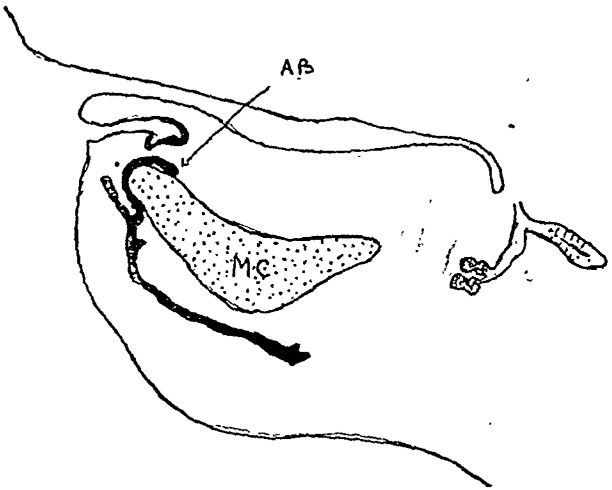

Fig. 7.—Sagittal section of head. M. C., Meckel's cartilage; A. B., alveolar border.

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13 Osteogenia fœtuum, cap. ix.

14. Hildebrandt's Anatomie, ii, 113.

15. Anatomie, vol. i, p. 127.

16. Cleland and Mackay: Human Anatomy, 1896, p. 250.

17. Osteology, seventh edition, p. 121.

18. Development of the Inferior Maxilla; Trans. Odontological Society.

5. Splenial appears as ledge of bone supporting teeth.
6. Disappearance of Meckel's cartilage from jaw, and fusion of splenial.

The splenial element is interesting on account of its relation to the developing teeth. On its first appearance it stands out at right angles to the dentary, serving to separate the teeth germs from Meckel's cartilage. If, at the fourth month of intrauterine life, the tissues on the inner side of the jaws be carefully dissected away, the splenial will be observed forming a distinct ledge of bone, supporting on its superior surface the dental follicles like flasks on a shelf; immediately beneath it runs Meckel's cartilage and the nerve. As the cartilage atrophies, the splenial extends downward to fuse with the dentary immediately below the nerve; in this way the mylohyoid branch gets shut off from the main portion of the inferior dental nerve. After the fourth month it extends vertically to form the inner wall of the maxilla, all trace of its originally separate condition being thus completely lost, the bone then assuming the condition which it presents at birth and with which we are all so familiar.

Let me now offer evidence of the compound nature of this bone of a different character. In the year 1814, the celebrated French anatomist, Serres, in a paper read before the Académie des Sciences, Paris, propounded certain laws bearing on ossification. Among them was one termed the "Loi de Conjugaison," by which he showed the various foramina in bones to result from the opposition of two or more distinct bones or distinct centers of ossification. To this law there were many exceptions; among the more unstable were certain foramina in the temporal bone and the inferior dental foramina.

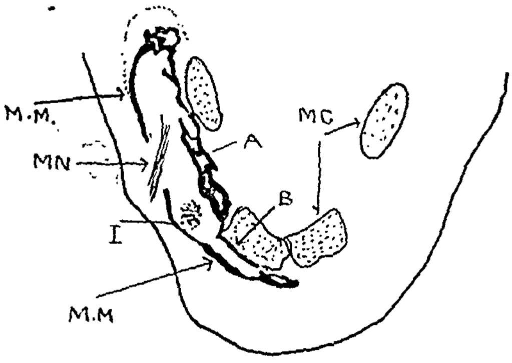

Fig. 8.—Horizontal section of 42 mm. embryo showing the growth of the inner alveolar border. M. M., primitive membrane bone; M. N., mental nerve; I., canine tooth; A., inner alveolar border; B., inner segment of that border; M. C., Meckel's cartilage.

When I first took up the subject of nerve foramina, Serres' researches were quite unknown to me, and I took as my guide this rule: "Whenever a nerve passes through a bone it marks the confluence of two or more ossific centers." Among the earliest bones to yield under this method of analysis were the temporal and the inferior maxilla; later I became acquainted with Serres' paper, the greater part of which is published as a footnote in the French traduction of Meckel's "Anatomie Comparée, vol. iv. Much to my satisfaction, I found that my method had yielded far more satisfactory results and had banished two of the apparently most obvious exceptions to the law, and it is most interesting to trace out the intricate pathways by which many nerves quit the cranial cavity in order to avoid piercing an ossific center.

Applied to the lower jaw, the rule stands thus: The nerves concerned are the inferior dental, mental and mylohyoid. The inferior dental enters by the foramen of the same name, formed by the coalescence of the coronoid, condyloid, dentary, angular and splenial elements; the nerve then travels in a tunnel formed on the outer side of the dentary and on the inner side of the splenial. The mental branch passes out through a fenestrum formed by dentary and mento-Meckelian ossification.

The mylohyoid runs in the groove which once lodged Meckel's cartilage, the sulcus, also corresponding to the junction of splenial with dentary. As the inferior dental passes along the canal, it sends up twigs to the teeth, and these twigs occupy foramina or spaces between the splenial and dentary. The relation of nerves thus lends additional help in unraveling the mystery.

Mr. Sutton, from this point, proceeds to the comparative side of the question, quoting the condition in the dogfish, the sturgeon, the *ganoid amia,* the cod, amphibia and reptiles. He finally gives a table of homologies thus:

HOMO.	FISH.
Mento-Meckelian.	Mento-Meckelian.
Angle.	Angular.
Condyle.	Articular.
Coronoid.	Surangular.
Splenial.	Splenial.
Dentary.	Dentary.

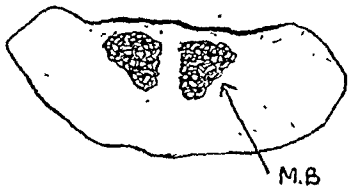

Fig 9.—(Harvard collection. 819, Q., 233.) Coronal section of 19 mm. embryo; M. B., membrane bone.

I have quoted Mr. Sutton's paper as fully as possible, because it is practically the most recent work on the subject and for reasons which I may explain later.

My own observations on the subject commenced several years ago. In cutting a section of the neck of a three months' fetus for examination of the developing larynx from above downward, the appearance of the developing jaw was such that it was evident that the last word had not been said on its ossification. Having made observations of one or two facts, namely, that Meckel's cartilage did ossify and that the so-called dentary center extended right up to the middle line (symphysis), I had to rest content, having no material available by which I might test the accuracy of statements made with regard to other centers of ossification in the lower jaw. Latterly, however, I have come into possession of fresh material, for some of which I have to thank Dr. Keith of the London Hospital, for much other material, several old pupils, and for many valuable sections, made especially for this research, Prof. C. S. Minot of Harvard University, who has taken the greatest possible interest and trouble over the matter. Many of the figures illustrating this paper are from sections supplied by him, and I very gladly take this opportunity of acknowledging his great kindness and at the same time the usefulness of the Harvard embryologic collection, which apparently is at the disposal of any responsible worker.

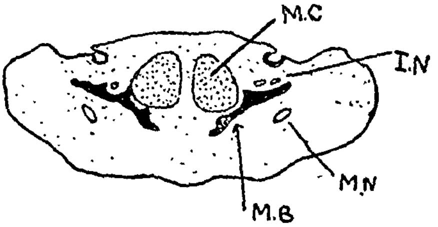

Fig. 10.—(Harvard collection, 819, P., 323.) Coronal section of 19 mm. embryo; M. C., Meckel's cartilage; M. B., membrane bone; M. N., mental nerve; I. N. incisive branch of mental nerve.

PERSONAL OBSERVATIONS.

In spite of the fact that I have come into possession of much new material, I am bound to say that I am not in a position to state exactly at what time ossification really begins, but I have cut embryos of from 12 to 15 mm. in length which may be reckoned as five and one-half weeks, and have seen no bone; ossification, however, is well advanced in embryos of from 19 to 21 mm. in length, so one may say that it occurs perhaps in the 17 mm. embryos. That, however, is not very important. It is rather to state the nature of the ossification and the number of centers of ossification which arise that this research has been undertaken.

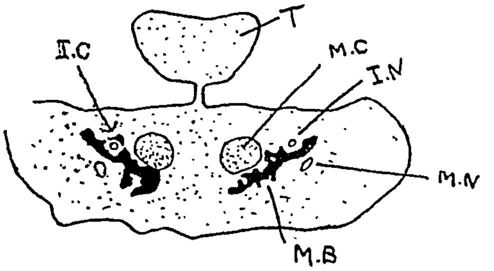

Fig. 11.—Coronal section of 19 mm. embryo; in front of mental foramen. incisor canal is just forming: M. B., membrane bone; M. N., mental nerve; I. N., incisive nerve; T. tongue; M. C. Meckel's cartilage.

We have seen the variety in the various accounts given in the text-books, and it remains for me to show if these accounts are accurate. In order to test these statements, sections have been made in various planes of embryos ranging from 19 mm. in length to over 100 mm., all sections being serial.

As is well known, Meckel's cartilage forms a very prominent object during the early stage in the development and ossification of the jaw, and until bone actually appears is for all practical purposes the lower jaw itself. Soon, as we have already seen, it becomes covered by ossification in membrane on its outer side, and from that time forward its importance diminishes and it ultimately disappears, except proximally and distally; proximally forming at least the malleus, and distally becoming an integral part of the bony jaw, for the time being at all events.

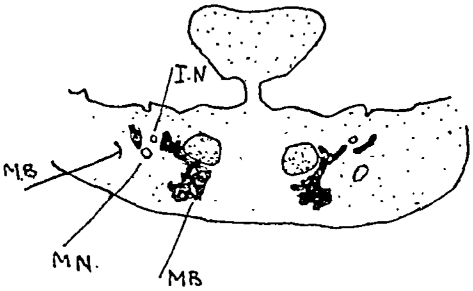

Fig. 12.—(Harvard collection, 819, P., 313.) Coronal section of 19 mm. embryo through mental foramen; M. N., mental nerve; I. N., incisive nerve.

As accounts given of Meckel's cartilage in man convey but little accurate information, and seeing that is such an important element in the formation of the jaw, it may not be out of place to make some remarks concerning it. It is somewhat late in appearance, for, although one can make out its anlage in precartilaginous conditions in the 12 to 13 mm. embryo, it does not become cartilaginous until after the femur does. This is not what one would expect, seeing that it is such an archaic structure.

When formed, the two cartilages (when seen in horizontal sections) form a horseshoe, incomplete in front, at first being separated by an appreciable interval; soon, however, they meet in the middle line, and later usually overlap one another there. Each cartilage is thickened in the vertical sense on each side of the future symphysis (see scheme of cartilage, Figs. 2 and 3). If we trace the cartilages backward from this anterior thickening, we find that they form a large bend, with the convexity outward, and still further backward form another bend, with the concavity outward, before ending in the malleus. The latter bend is found in front of the Eustachian tube. In its concavity lies the inferior dental nerve, and against its convexity the lingual nerve (Fig. 4).

FATE OF MECKEL'S CARTILAGE.

The posterior or proximal end becomes converted into the cartilaginous malleus, the anterior or distal end from about the level of the mental nerve becomes incorporated in the jaw and undergoes ossification. The remainder disappears completely. It is generally stated that a part, that stretching between the lingula of the lower jaw and the malleus, becomes the internal lateral ligament of the jaw, but that, I think, is more than doubtful, as one can see the ligament quite well developed at the same time that the cartilage is also well developed, the latter lying in a groove on the inner side of the former. In the transverse horizontal section of the head of a 42 mm. fetus, the two structures appear to be quite independent of one another. So much for Meckel's cartilage for the present; it may be referred to later.

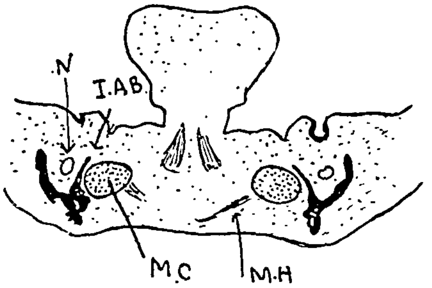

Fig. 13.—(Harvard collection, 819, O., 305.) Coronal section of 19 mm. embryo behind mental foramen to show inner alveolar border, I. A. B.; I. D. N., inferior dental nerve; M. C., Meckel's cartilage; M. H., mylo-hyoid muscle; N., inferior dental nerve.

We may now examine the appearance presented by the membrane bone, and that may be best done by examination of horizontal sections primarily, then of corneal ones corrected from time to time by sections cut sagittally.

HORIZONTAL SECTIONS.

These sections were cut by Prof. Minot from an embryo measuring in length 21.8 mm. and were stained with alum cochineal and alum hematoxylin—the latter only being effective. They yielded most interesting results.

In one section (Fig. 4) one can see Meckel's cartilage M. C. sweeping backward and outward; in its anterior concavity is the lingual nerve L. N., and in the concavity of the outwardly directed posterior end of the cartilage is the inferior dental nerve, I. D. N. Behind the lingual nerve is the Eustachian tube. All these, but especially

Meckel's cartilage and the inferior dental nerve and its terminal branches, are important landmarks. Figure 5 is cut a little higher up than Figure 4. It shows the anterior end of Meckel's cartilage, M. C., in front of which is membrane bone, to the outer side of which is a nerve—the mental, M. N. This is succeeded by another strip of membrane bone, M. B., giving an appearance as if there were here two centers of ossification. These two patches of bone are continuous below the mental nerve, as in Figure 4, and appear as one strip thicker near the middle line than elsewhere.

From what one can see in Figures 4 and 5 and in the scheme (Fig. 6), it appears that ossification has commenced in front of the anterior expanded end of Meckel's cartilage and the incisive branch of the inferior dental nerve, and has extended backward under the mental nerve, M. N., as a strip of bone rapidly diminishing in thickness, and consequently looking more faintly stained than that near the middle line. It is in close relation with the antero-external aspect of the inferior dental nerve and its incisive branch. No trace of any bone is to be seen on the inner side of these nerves at this time. In other words, there is not at this time developed an internal alveolar border. This, however, very rapidly appears, and its method of appearance is of great importance, as it involves the question of the separate origin of that part of the bone. Some authors, whose observations have certainly not been based on serial sections, e. g., Spix, Cruveilhier, Renault and Rambaud and Sutton, describe a separate ossific center for the splenial, as Sutton calls it. We will be able to see, however, that this inner alveolar border does not commence in that way, but arises by ingrowth from the main mass just behind the mental nerve in the form of an obliquely directed shelf, which comes to a point behind the "lingula." This shelf insinuates itself between the inferior dental nerve and Meckel's cartilage, coming to a point behind, as already said, and overhanging there Meckel's cartilage. At no time is it completely separate from the main mass, and it is, therefore, not an independent element —in other words, there is no splenial center.

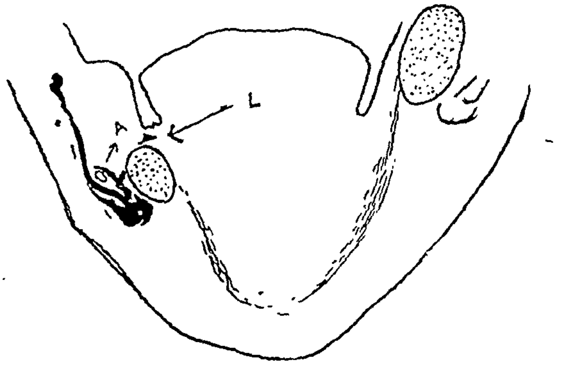

Fig. 14.—Showing formation of inferior dental canal at posterior end by a piece, A, growing outward from inner alveolar process. L. is the lingula.

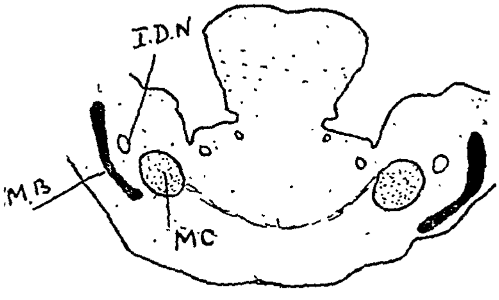

Fig. 15.—(Harvard collection, 819, N., 287.) Coronal section of 19 mm. embryo. I. D. N., inferior dental nerve; M. C., Meckel's cartilage; M. B., membrane bone.

At first, there is *no inner alveolar border* behind the incisive nerve, but there grows backward over Meckel's cartilage and under the incisive nerve near its origin from the inferior dental nerve, a shelf. In Figure 7 (my own collection), this shelf, A. B., can be seen growing backward over Meckel's cartilage, M. C., and under a tooth germ (second incisor). The inner alveolar border, then, arises from the main mass in two ingrowths, first, one under the inferior dental nerve, which enlarges in the backward direction and ends ultimately at the lingula, the other growing under the outer end of the incisive branch of the inferior dental nerve and extending inward toward the middle line.

In Figure 8 (my own collection), a horizontal section of the head of a 42 mm. embryo, M. M. represents primitive membrane bone forming the outer alveolar border. M. N. is the mental nerve. I. is the canine tooth. A. is the posterior segment of the inner alveolar border much reticulated and, therefore, in an advanced state of ossification, whereas B is the anterior segment of that border existing only as a thin lamella and developing somewhat later. It will be to our advantage to examine a series of coronal sections of a 19 mm. embryo cut by Prof. Minot and corrected by others of a later date cut by him and by myself. If such be examined from before backward, very instructive views are obtained both of the manner of growth of the formative bony center and its subsequent extensions.

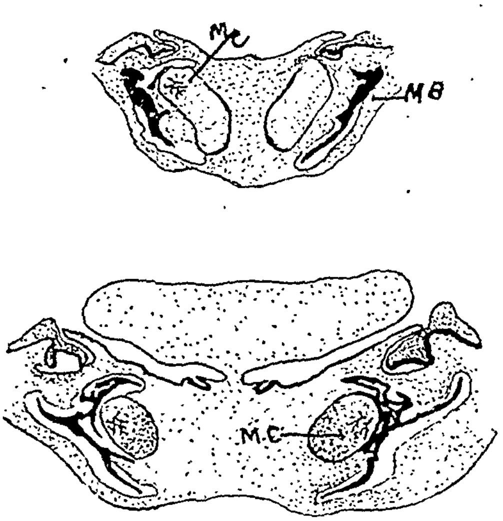

Fig. 16.—(a) Meckel's cartilage ossifying; M. B., membrane bone. (b) Shows upper and lower shelves, which ensheath Meckel's cartilage.

In Figure 9, one can see on each side of the middle line a mass of membrane bone which lies in front of the anterior expanded end of Meckel's cartilage and extends to the middle line, not, as Sutton thinks, stopping short at the mental nerve. He says that all that part of the mandible anterior to the mental foramen is ossified from Meckel's cartilage. This section, and others, notably one of the third month, cut horizontally, *show* that the membrane bone reaches *to the middle line*

(Figs. 9 and 8), *and that Meckel's cartilage does not* ossify as yet up to the middle line.

In Figure 10, we have still no inner alveolar border, the two cartilages of Meckel are altering their shape. M. C. is Meckel's cartilage. M. B. is membrane bone outside it. M. N. the mental nerve, and I. N. the incisive branch of that nerve.

In Figure 11, which is just in front of the mental foramen, one sees Meckel's cartilage more widely separated and more circular in form; on the outer side of them one sees the membrane bone M. B. jutting upward and outward between the mental and incisive nerves, M. N. and I. N. In the left half of the section, one can see the incisive nerve being enclosed in a canal—the incisive canal I. C. There is no inner alveolar border in this section. In Figure 12 the jaw is cut through at the mental foramen. The membrane bone here seems to be in two parts and one might think that there were two centers of ossification, but in the subsequent sections we will find that is not the case—M. B. is membrane bone, M. N. the mental nerve, and I. N. the incisive nerve. The two nerves here mark the mental foramen.

In Figure 13 the jaw is cut behind the mental foramen and one now sees an alveolar border passing up between the inferior dental nerve N. and Meckel's cartilage M. C., it is evidently a shelf and an outgrowth from the main mass. This inner alveolar border comes to a point behind, hence when cut coronally that point appears detached (Fig. 14, my own collection) and simulates a separate splenial.

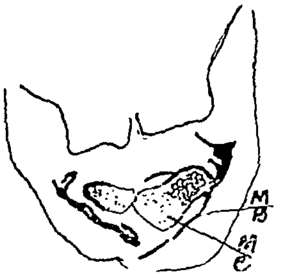

Fig. 17.—Coronal section at third month, showing ensheathing of Meckel's cartilage by membrane bone. M. C., Meckel's cartilage; M. B., membrane bone.

Still further back (Fig. 15) the inner alveolar border has disappeared and the jaw is once more unilamellar, having to its inner side Meckel's cartilage, M. C., and the inferior dental nerve, I. D. N. Still further back one may see the condyle in a procartilaginous condition, but no drawing is given of this, the coronoid process is also evident, but quite thin and it can be seen to be an ossification of that fibrous blastema which lies like a wedge between the masseter and temporal muscles at this early stage of life; it is perhaps more in connection with the temporal muscle than the masseter that it is developed.

So far, then, we have seen a jaw consisting of Meckel's cartilage and a membrane bone, which stretches to the middle line in front, and behind the mental nerve gives off a shelf—the internal alveolar border. We have seen that the coronoid process, and for that matter too, the angle, are thin, and that the condyle is not yet ossified. Very soon this membrane bone increases in amount, it has already done so in front and where ossification first took place, Figure 6; it now thickens and becomes reticulated in the region of the angle, the top of the coronoid process and in that part of the inner alveolar border which is developed behind the nerve. It is now that those false impressions may arise from the employment of crude methods such as that of Sutton, who, removing one-half of the jaw from a fetus, immersed it in alcohol and cleared it with balsam and saw centers for "dentary," "condyle," and "coronoid," as well as a separate "splenial" center. Serial sections will show the falsity of conclusions drawn from the employment of such a method.

FURTHER CHANGES IN THE MEMBRANE BONE—THE FORMATION OF THE ROOF OF THE INFERIOR DENTAL CANAL.

This commences to be formed quite early in fetal life, in the neighborhood; first, of the mental nerve, then of the incisive branch of the inferior dental, and, considerably later, during the third month of fetal life it appears near the lingula. In each case, save that of the roof of the mental canal, it appears in the form of a spicule running from the inner alveolar wall to the outer. In Figure 11, Harvard collection, the incisive nerve can be seen lying in a canal or tunnel formed by a spicule of bone arching over it from what will become inner alveolar border to that which is the outer alveolar border. In Figure 14 (my own collection) there can be seen at A a spicule of bone which is growing outward over the inferior dental nerve to the outer bony lamella, and so covering over the nerve in the neighborhood of the permanent inferior dental foramen.

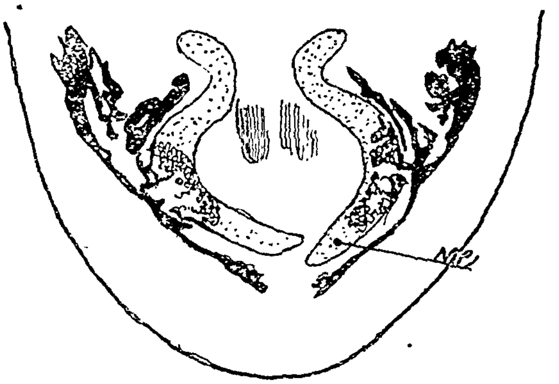

Fig. 18.—Horizontal section of jaw at third month, showing outward bend of Meckel's cartilage, M. C., and that cartilage undergoing ossification.

The inferior dental foramen is not, by the way, as Sutton would have us believe, formed at the junction of the coronoid angular, dentary, condyloid and splenial centers, for these centers are, for the most part, imaginary, certainly in the case of the coronoid, angular and splenial, and the condyle is so peculiarly formed as to be out of the question here. Sutton, too, would have us believe that the mental foramen is formed at the junction of his mento-Meckelian center, developed from Meckel's cartilage with the membrane bone which he calls dentary. We have seen that there is no such mento-Meckelian center such as Sutton describes and that the mental foramen is originally a groove on the top of the membrane bone which grows from before backward underneath the mental nerve.

In support of his theory with reference to the splenial center, Sutton quotes the mylohyoid nerve and states that it is shut off from the inferior dental by fusion of the "splenial" with the dentary. As a matter of fact, the mylohyoid nerve has reached its place before the inner alveolar border has grown to any extent backward.

FURTHER CHANGES IN THE MEMBRANE BONE.

These changes, so far as we are concerned here, involve its relation to Meckel's cartilage. Sections cut either coronally or horizontally show that Meckel's cartilage becomes invested with a covering of membrane bone, partly by ossification taking place in its sheath, partly by projecting shelves growing from the inner alveolar border and the undivided membrane bone below that. Then, in Figure 16—a, b—(my own collection), *Meckel's cartilage can be seen to lie in a* bony groove whose upper wall is from the inner alveolar border and the lower one from the main mass.

In Figure 17, ossification can be seen in the sheath of Meckel's cartilage. By the meeting of the upper and lower shelves and the fusion of the ossified sheath of Meckel's cartilage, the cartilage becomes included in front of the mental nerve within the jaw; behind the nerve it lies in a groove formed by similar shelves, which, however, never meet.

The septa between the tooth sockets are developed comparatively late in fetal life, that one behind the canine tooth appearing before the others. It can be very well seen in a four months' fetus. During this time, changes have been taking place in Meckel's cartilage itself.

OSSIFICATION OF MECKEL'S CARTILAGE.

About the tenth week of fetal life, ossification commences in Meckel's cartilage at a spot on its outer side corresponding with the site of the mental foramen, or even a little internal to this, and nearer the upper than the lower border of the cartilage. This ossification extends gradually inward, but does not completely involve anterior end of Meckel's cartilage until the time of birth even, as evidenced by the presence of cartilaginous masses which are well known in this situation (Figures 16, 17, 18).

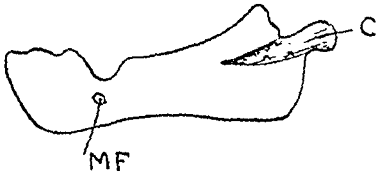

Fig. 19.—Scheme of left half of jaw, showing plug of cartilage, C., and mental foramen, M. F.

APPEARANCE OF ADDITIONAL CARTILAGES IN THE JAWS.

These are described in various places in the jaw. I have not myself seen all that have been described, but that is no reason for believing that they do not exist, the only question being their constancy. One, at least, of these cartilaginous masses is constant and it is of peculiar form, existing in the form of a plug, which enlarges to form the condyle proximally and tapers away distally to a point, having traversed the neck and root of the coronoid process of the jaw. This is shown in Figure 19, C being this plug of cartilage. It appears during the second and third months and very soon becomes calcified. It is enveloped everywhere except at the condyle by membrane bone and it becomes transformed into bone itself almost as soon as formed.

In Figure 20 (my own collection) one sees this cartilage undergoing ossification and being surrounded by a sheath of membrane bone; at the condyle B there is a part of cartilage as yet unossified and this is covered by a cap of fibrous tissue which, according to Hertwig, is permanent. *This plug of cartilage has never any connection with Meckel's cartilage.*

Recently, Dr. Low of Aberdeen,[19] in an excellent demonstration of the jaw ossification, showed a patch of cartilage along the anterior border of the coronoid process, but I do not know if that be constant. I, myself, have never met with it, but that may be because the material I have cut is too young.[20] Other patches are said to occur at the angle and at the outer alveolar border in the neighborhood of the incisor and canine teeth (Kollman).

CONCLUSIONS.

Having now examined various sections of the jaw and those of different ages, one may draw the following conclusions:

First.—The jaw in its ossification is not so complex as some would have us think, but it is for all that complex, involving (a) Meckel's cartilage at its anterior extremity, (b) the membrane on the outer side of Meckel's cartilage; (c) at least one accessory cartilage which is found in the condyle, neck and base of the coronoid process of the jaw. These statements apply to each half of the jaw.

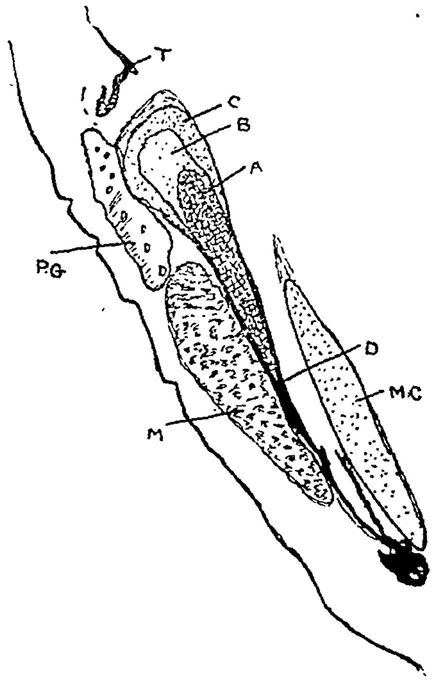

Fig. 20.—Horizontal section of three months head, through condyle and neck of jaw. D., ensheathing membrane bone; A., cartilage bone; P. G., parotid gland; M., masseter; M. C., Meckel's cartilage.

Second.—In order of sequence, ossification occurs first in the membrane between the mental nerve and the middle line and extends backward under the mental nerve. Next, ossification commences in Meckel's cartilage about the tenth week of fetal life in the region of the mental foramen and gradually extends inward. That part of the jaw then between the mental foramen and the symphysis is compound in origin, being partly cartilaginous, partly membranous, not entirely cartilaginous, as Sutton says. Finally, ossification takes place in the accessory mass of cartilage in the condyle neck and root of the coronoid process at the third month.

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[19] Proceedings of Anat. Soc. of Great Britain and Ireland, May, 1905.

[20] Since this was written I have seen a specimen showing the cartilaginous strip along the anterior border of the coronoid process.

Third.—There are no separate centers in membrane for either the coronoid process or for the angle or the so-called splenial, all these parts being outgrowths, as it were, from the main mass.

Fourth.—The inner alveolar border is developed in two parts by ingrowth from the main mass and at two different periods. That part behind the mental foramen appearing first and elongating from before backward, that part in front of the foramen appearing later and growing from behind forward.

Fifth.—The canal for the nerves is completed by the growth of spicules from one alveolar border to the other over the top of the nerves, the mental nerve being first so covered, then the incisive, and much later the inferior dental near the permanent inferior dental foramen.

Sixth.—The sockets for the teeth become bony comparatively late, that for the canine appearing first.

Seventh.—Meckel's cartilage becomes incorporated in the jaw anteriorly by the development of upper and lower shelves, which gradually close over it; behind the mental foramen these shelves do not meet, and Meckel's cartilage is consequently not included in the jaw, but gradually atrophies.

Eighth.—I do not think that Meckel's cartilage atrophies to form the internal lateral ligament of the jaw. This ligament at the fourth month can be seen quite distinctly in an ordinary dissection to be independent of Meckel's cartilage.

All the figures except 2, 6 and 7 are camera lucida drawings.

THE ANTI-MICROBIC ACTION OF IODIN.*

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(*Concluded from page 606.*)

STAPHYLOCOCCUS EXPERIMENTS.

The tables in Group 4 show the results of the experiments with cultures of *Staphylococcus pyogenes aureus:*

CONSIDERATION OF EXPERIMENTS WITH STAPHYLOCOCCUS.

1/1000 for *fifteen* minutes shows marked inhibitory effect. A and C show no growth throughout. On the second day B and D show fractional growth which increases gradually on the third and fourth days, when it equals less than ½ control growths.

1/1000 for *thirty* minutes gives a marked inhibitory effect. The first day there is no growth. On the second day A equals 1/6 control growth, B shows a point of growth, C is negative, and D gives 3/7 of control growth. On the third and fourth days B and C show simply a large point, while A and D give a gradual increase, equaling less than ½ control growth.

1/1000 for *sixty* minutes shows a marked inhibitory effect. On the first day there is no growth. On the second day A gives no growth, B and C give points, D equals control growth. On third and fourth days A shows no growth, B and C give no further development, D equals control growth.

1/500 for *fifteen* minutes shows an inhibitory effect. On the first day A, C, and D are without growth, B equals ½ control growth. On the second day the growth on experimental tubes equals 1/6 control growth. This growth increases slowly on the third and fourth days, when it equals 1/8 control growth.

1/500 for *thirty* minutes shows an inhibitory effect. A, C, and D show no growth the first day, while B equals 1/3 control growth. On the second day A, B, and C show less than ¼ control growth, D equals a point. On the third and fourth days D gives no further development, while A, B, and C show a gradual increase, which is less than ⅜ of control growth on the fourth day.

1/500 for *sixty* minutes exhibits an inhibitory effect. On the first day A, C, and D give no growth, B, equals ¼ control growth. On the second day A and B equal ¼ control growth, C shows a point and D shows no growth. On the third and fourth days A and B show rather rapid increase in growth, equaling ⅝ control growth on the fourth day. C shows a less rapid increase, equaling ¼ control growth. D shows points.

1/300 for *fifteen* minutes exhibits a marked inhibitory effect. On the first day there is no growth. On the second day A, C, and D give no growth, B equals 1/6 control growth. On the third and fourth days A and C show points, while B and D show slowly increasing growth, equaling about 1/3 control growth.

1/300 for *thirty* minutes shows a marked inhibitory effect. On the first and second days there is no growth. C and D show no growth throughout. On the third and fourth days A and B show a slightly increasing fractional growth, equaling about 1/7 control growth.

GROUP 4.—ACTION OF SOLUTIONS ON STAPHYLOCOCCUS PYOGENES AUREUS (FOUR-DAY-OLD CULTURES).

TABLE 52.—IODIN 1-1,000. EXPOSURE 15 MIN.

Day.	A	A′	B	B′	C	C′	D	D′
1	0	1	0	.5	0	.5	0	.5
2	0	1.5	.5	.7	0	1	.3	1
3	0	2.2	1	1.2	0	2	.6	1.5
4	0	3.5	1.2	2.5	0	3	1	3

TABLE 53.—IODIN 1-1,000. EXPOSURE 30 MIN.

Day.	A	A′	B	B′	C	C′	D	D′
1	0	1	0	.6	0	1	0	.5
2	.3	2	?	1.5	0	2	1	2.5
3	.5	3	?	2.5	?	3	1.2	3.5
4	1	3.5	?	3	?	3.5	2.2	4

TABLE 54.—IODIN 1-1,000. EXPOSURE 60 MIN.

Day.	A	A′	B	B′	C	C′	D	D′
1	0	1	0	1	0	.5	0	.3
2	0	1.5	?	2	?	1	1	1
3	0	2.5	?	2.5	?	2	2	1.5
4	0	3	?	3	?	2.5	2.5	2.5

TABLE 55.—IODIN 1-500. EXPOSURE 15 MIN.

Day.	A	A′	B	B′	C	C′	D	D′
1	0	1.5	.5	1	0	1.5	0	1.5
2	.2	3	1	2	.1	3	.1	3
3	.5	3.5	2.2	3	.5	4.5	.5	4
4	1	4	2.5	4	1	5	1.2	4.5

TABLE 56.—IODIN 1-500. EXPOSURE 30 MIN.

Day.	A	A′	B	B′	C	C′	D	D′
1	0	2	.3	1	0	2	0	2
2	.1	3	.7	2	.5	3	?	3
3	.2	3.5	2	3	1	4.5	?	4
4	.5	4	2.5	4	1.5	5	?	5

TABLE 57.—IODIN 1-500. EXPOSURE 60 MIN.

Day.	A	A′	B	B′	C	C′	D	D′
1	0	.6	.2	1	0	1.5	0	2
2	.5	2	.5	2	?	2.5	0	3
3	2	3.5	1	3	.2	4	?	4
4	3	4	2.2	4	1.2	5	?	5

TABLE 58.—IODIN 1-300. EXPOSURE 15 MIN.

Day.	A	A′	B	B′	C	C′	D	D′
1	0	.5	0	1	0	1	0	.5
2	0	1.3	.3	2	0	1.5	0	1
3	?	3	1.2	3	?	2.5	.2	2.5
4	?	4	1.6	4	?	3.5	.3	3

TABLE 59.—IODIN 1-300. EXPOSURE 30 MIN.

Day.	A	A′	B	B′	C	C′	D	D′
1	0	1	0	.3	0	1	0	.2
2	0	1.5	0	1.5	0	1.5	0	1.2
3	.3	3	.2	2.5	0	2	0	2
4	.7	3.5	.6	3.5	0	3	0	3

TABLE 60.—IODIN 1-300. EXPOSURE 60 MIN.

Day.	A	A′	B	B′	C	C′	D	D′
1	0	.7	0	.5	0	.5	0	1
2	0	1	0	1	0	1	0	2
3	.1	2.5	0	2	.1	2.7	.1	3
4	.3	4	0	3	.5	3.7	.7	4

TABLE 61.—IODIN 1-200. EXPOSURE 15 MIN.

Day.	A	A′	B	B′	C	C′	D	D′
1	0	1	0	.3	0	.3	0	1
2	0	2	0	1.5	0	1.5	0	2
3	0	3	0	3	0	2.5	0	3
4	0	4	0	4	0	3	0	4

TABLE 62.—IODIN 1-200. EXPOSURE 10 MIN.

Day.	A	A′	B	B′	C	C′	D	D′
1	0	.5	0	1	0	.5	0	.1
2	0	2	0	2	0	3	0	1.5
3	0	3	0	2.5	0	4	0	3
4	0	4	0	3	0	4.2	0	3.5

TABLE 63.—IODIN 1-200. EXPOSURE 5 MIN.

Day.	A	A′	B	B′	C	C′	D	D′
1	0	1	0	.5	0	1	0	1
2	0	2	0	1	0	1.5	0	2
3	0	3	0	2.5	0	3	0	3.5
4	0	4	0	3.5	0	4	0	4

TABLE 64.—IODIN 1-200. EXPOSURE 4 MIN.

Day.	A	A′	B	B′	C	C′	D	D′
1	0	1.5	0	1	0	1.5	0	.5
2	0	2.5	0	2	0	2.5	0	1.5
3	0	3.5	?	3	.1	4.5	0	3
4	0	4.5	?	4	.5	5	0	4

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* Work done as Fellow in Surgery at the Senn Laboratory, Rush Medical College.

1/300 for *sixty* minutes shows a marked inhibitory effect. On the first and second days there is no growth. On the third and fourth days A, C, and D show a small fractional growth which increases slightly, equaling 1/7 control growth on the fourth day. B shows no growth throughout.

1/200 for *fifteen* minutes shows no growth.

1/200 for *ten* minutes shows no growth.

1/200 for *five* minutes shows no growth.

1/200 for *four* minutes exhibits a very marked inhibitory effect, A and D showing no growth. On the third day B shows points of growth and C a small fractional growth. On the fourth day there is a slight increase in both B and C. B showing more points of growth, while C equals 1/10 of control growth.

SUMMARY OF EVIDENCE ON STAPHYLOCOCCUS.

The death of the *Staphylococcus pyogenes aureus* occurs after an exposure of five minutes to a 1/200 solution of iodin. A consideration of the inhibitory action shows that this effect begins after an exposure to a 1/1,000 solution for fifteen minutes, where it is quite marked. This effect, however, increases but slightly for the longer exposure to this strength and also for all exposures to the 1/500 solution. Irregularity in action is observed. On using the 1/300 solution the inhibitive effect shows a great augmentation over preceding strength, which increases irregularly for time of exposure. When we expose for less than five minutes to a 1/200 solution (the death point) marked inhibition, but not death, of micro-organism is observed.

STREPTOCOCCUS EXPERIMENTS.

The tables in Group 5 show the experiments with streptococcus cultures.

is shown by one tube, while the others show death of organism. Therefore, it is evident that in the case of streptococcus pyogenes the sphere of inhibition is small because the relative points at which inhibition and death occur are almost identical.

BLASTOMYCOSIS EXPERIMENTS.

The experiments with blastomycosis cultures are detailed in Group 6.

CONSIDERATION OF EXPERIMENTS WITH BLASTOMYCOSIS.

1/1000 for *fifteen* minutes shows no effect.

1/1000 for *thirty* minutes shows no effect.

1/1000 for *sixty* minutes shows on the fourth day of real growth or second day of apparent growth a considerable inhibitory effect which, however, does not extend to the following day.

1/500 for *fifteen* minutes shows no growth.

1/500 for *ten*, *five*, and *four* minutes shows no growth.

1/500 for *three* minutes shows no growth on A, C, and D throughout. B is free from growth up to the fourth day of the actual growth or third day of real growth. At this point a very slight growth is noticed which increases very slowly to the tenth day, when it equals ¼ control growth.

1/500 for *two and one-half* minutes shows an inhibitory effect of markedly varying degree on the different tubes. C gives no growth throughout, D gives none up to the eighth day, when a unit of growth appears which increases progressively on the ninth and tenth days, equaling, on the tenth day, 1/3 control growth. A shows a marked inhibitory effect up to the seventh day, when it gives a rapid increase in growth. On the remaining days the experimental and control tubes are practically identical in growth. Likewise, B shows a marked inhibitory effect up to the fifth day, when experimental tube begins to increase rapidly, equaling control tube on the eighth, ninth and tenth days.

GROUP 5.—ACTION OF SOLUTIONS ON STREPTOCOCCUS PYOGENES (THREE-DAY-OLD CULTURES).

TABLE 65.—IODIN. 1-1,000. EXPOSURE 15 M.*

Day.	A	A′	B	B′	C	C′	D	D′
1	?	2	.3	2	?	2	?	1.7
2	?	3	.3	2.5	?	2.5	.1	2.5
3	?	3.2	.5	3	.2	3	.3	3
4	.6	3.5	.5	3.2	.3	3.3	.5	3.2

TABLE 66.—IODIN 1-1,000. EXPOSURE 30 MIN.

Day.	A	A′	B	B′	C	C′	D	D′
1	0	1.5	0	2	0	2	0	1.5
2	0	2.5	0	2.2	0	3	0	2.2
3	0	3.5	0	3	0	3.5	0	3
4	0	4	0	3.5	0	4	0	3.5

TABLE 67.—IODIN 1-500. EXPOSURE 10 MIN.

Day.	A	A′	B	B′	C	C′	D	D′
1	0	1.5	0	1	0	2	0	2
2	0	2.5	0	2.5	0	3	0	3
3	0	3	0	3.5	0	4	0	3.5
4	0	4	0	4	0	5	0	4

TABLE 68.—IODIN 1-500. EXPOSURE 5 MIN.

Day.	A	A′	B	B′	C	C′	D	D′
1	0	1	0	.5	0	1	0	1.5
2	0	1.5	0	1	0	2	0	2.2
3	0	3	0	2	0	3	0	3.5
4	0	3.5	0	3	0	3.5	0	4

TABLE 69.—IODIN 1-500. EXPOSURE 4 MIN.

Day.	A	A′	B	B′	C	C′	D	D′
1	0	1.5	0	1	0	1	0	1
2	0	2	0	1.5	0	1.3	0	1.7
3	0	3	0	2.5	0	2	0	2.5
4	0	4	0	3.5	0	3	0	3

TABLE 70.—IODIN 1-500. EXPOSURE 3 MIN.

Day.	A	A′	B	B′	C	C′	D	D′
1	0	.7	0	1.5	0	1	0	.5
2	0	2	0	2.5	0	2	0	1.5
3	0	3	0	3	0	3.2	0	3
4	0	4	0	3.5	0	3.5	0	4

TABLE 71.—IODIN 1-500. EXPOSURE 2 MIN.

Day.	A	A′	B	B′	C	C′	D	D′
1	0	1	0	1	0	1.2	0	1.5
2	0	2	0	2	0	2	0	2.5
3	0	3	0	3	0	3	0	3.5
4	0	3.5	0	4	0	3.5	0	4

TABLE 72.—IODIN 1-500. EXPOSURE 1 MIN.

Day.	A	A′	B	B′	C	C′	D	D′
1	0	1	0	1.5	0	1	0	1
2	0	2	0	2.5	.5	2	0	2
3	0	3	0	3.5	1	3.2	0	3
4	0	4	0	4	2	3.5	0	3.5

* In the exp. tubes the growth was extremely thin and film-like, showing in A, B, C and D microscopically, poorly staining small streptococci, in comparison with the controls.

CONSIDERATION OF EXPERIMENTS WITH STREPTOCOCCUS.

1/1000 for *fifteen* minutes shows an inhibitory effect. On the first day A, C, and D show points of growth, B 1/6 of control growth. On the second, third and fourth days there is a very slight, irregular increase in growth on experimental tubes. This growth equals about 1/6 control growth.

1/1000 for *thirty* minutes shows no growth.

1/500 for *ten* minutes shows no growth.

1/500 for *five*, *four*, *three*, and *two* minutes shows no growth.

1/500 for *one* minute exhibits marked inhibitory effect. A, B and D are free from growth throughout. On the second day C shows a fractional growth which increases rather rapidly on the third and fourth days, equaling 4/7 of the control growth at the end.

SUMMARY OF EVIDENCE ON STREPTOCOCCUS.

An exposure for two minutes to a 1/500 solution of iodin causes the death of *Streptococcus pyogenes*. The same result is obtained by using a 1/1000 solution for thirty minutes. A consideration of the inhibitory effect shows that this power is exhibited very markedly by a 1/1000 solution for fifteen minutes. Likewise, on exposing organism to a 1/500 solution for one minute, we find that an inhibitory power of medium degree

SUMMARY OF EVIDENCE ON BLASTOMYCOSIS.

Blastomyces is killed by an exposure of four minutes to a 1/500 solution of iodin. Here, more markedly than in preceding series, is the inhibitory effect of solutions employed shown to be of little consequence. In fact, in this series, it may be almost entirely disregarded, for it is shown only transitorily for one day by a 1/1000 solution for sixty minutes. In other words, there is practically no sphere of inhibition, the first effect shown being destruction of fungus. The exposures for three and two and one-half minutes simply bear out preceding statements, showing as they do either absolute death or markedly irregular inhibitory effect.

ACTINOMYCOSIS EXPERIMENTS.

The results of the experiments with cultures of actinomycosis are shown in the tables in Group 7.

CONSIDERATION OF EXPERIMENTS WITH ACTINOMYCOSIS.

1/1000 for *fifteen* minutes shows no inhibitory effect, especially on the second, third and fourth days. A and C are negative to the fifth day, when points appear. Likewise, on the *fifth* day B equals 3/7 control growth and D gives points. From the fifth day on A and C show no further development, B increases rapidly to 2/3 control growth, and D slowly to 1/6 control growth.

1/1000 for *thirty* minutes shows a marked inhibitory effect. On the second, third and fourth days there is no growth. On the fifth day points appear on A, C, and D, which, to the end, increase very slightly. On the fifth day points of growth appear on B, which, on the remaining days, increases slowly, equaling at the end 1/12 of control growth.

GROUP 6.—ACTION OF SOLUTIONS ON BLASTOMYCOSIS (TEN-DAY-OLD CULTURES).

Table 73.—Iodin 1-1,000. Exposure 15 Min.

Day.	A	A′	B	B′	C	C′	D	D′
3	?	?	?	?	?	?	?	?
4	1	1	1.5	2	1	1	1.5	2
5	1.2	1.5	3	3	1.2	2	2	2.5
6	1.5	2.2	3.5	3.5	1.2	3	2.5	3.5
7	2.7	3.5	4	4	2	4	3.5	4.5
8	4.2	4.2	5	5	4	5	5	5
9	4.7	4.5	5.5	5.5	4.2	5	5.5	5.2
10	5.2	5	6	6	5	5.5	6	6

Table 74.—Iodin 1-1,000. Exposure 30 Min.

Day.	A	A′	B	B′	C	C′	D	D′
3	?	?	?	?	?	?	?	?
4	1	1	1.2	2	1	1	1.5	2
5	2	1.5	2.5	3	1.2	2	2	2.5
6	2.5	2.2	3	3.5	1.7	3	2.2	3.5
7	3	3.5	4	4	3	4	3	4.5
8	4	4.2	4.5	5	4.5	5	4	5
9	4.5	4.5	5	5.5	5	5	4.7	5.2
10	4.7	5	5.5	6	6	5.5	5.5	6

Table 75.—Iodin 1-1,000. Exposure 60 Min.

Day.	A	A′	B	B′	C	C′	D	D′
3	?	?	?	?	?	?	?	?
4	.6	1	.6	2	.5	1	1	2
5	1.5	1.5	2	3	1	2	2.5	2.5
6	2	2.2	2.7	3.5	1.5	3	3	3.5
7	2.5	3.5	4	4	2.5	4	4	4.5
8	4	4.2	5	5	4	5	5	5
9	4.5	4.5	5.5	5.5	5	5	5.5	5.2
10	5.2	5	6	6	6	5.5	6.5	6

Table 76.—Iodin 1-500. Exposure 15 Min.

Day.	A	A′	B	B′	C	C′	D	D′
2	0	?	0	?	0	?	0	?
3	0	.1	0	.1	0	.2	0	.2
4	0	.5	0	.5	0	.7	0	.7
5	0	2.2	0	1.2	0	1.5	0	2
6	0	3.5	0	3	0	2.5	0	3
7	0	4.5	0	4.5	0	3.5	0	4
8	0	5	0	5	0	4.5	0	4.5
9	0	5.5	0	5.5	0	5	0	5
10	0	6	0	6	0	5.5	0	5.5

Table 77.—Iodin 1-500. Exposure 10 Min.

Day.	A	A′	B	B′	C	C′	D	D′
2	0	?	0	?	0	?	0	?
3	0	.5	0	.6	0	.5	0	.7
4	0	1	0	2	0	1.2	0	1.5
5	0	2.7	0	3	0	2.5	0	2.7
6	0	3.5	0	4	0	3	0	4
7	0	4	0	4.5	0	4	0	4.5
8	0	4.5	0	5	0	4.5	0	5
9	0	5.5	0	5.6	0	5	0	5.5
10	0	6	0	6	0	5.5	0	6

Table 78.—Iodin 1-500. Exposure 5 Min.

Day.	A	A′	B	B′	C	C′	D	D′
2	0	?	0	?	0	?	0	?
3	0	1	0	1	0	1	0	1
4	0	1.7	0	2	0	2	0	1.5
5	0	3	0	3	0	3.5	0	2.5
6	0	3.5	0	4	0	4	0	2.7
7	0	4	0	4.5	0	4.5	0	3
8	0	5	0	5.5	0	5.5	0	4
9	0	5.5	0	6	0	6	0	4.5
10	0	6	0	6.5	0	6.5	0	5

Table 79.—Iodin 1-500. Exposure 4 Min.

Day.	A	A′	B	B′	C	C′	D	D′
2	0	?	0	?	0	?	0	?
3	0	.5	0	?	0	.3	0	.3
4	0	1	0	.1	0	1	0	1.8
5	0	3	0	1.5	0	2.5	0	2.5
6	0	4	0	2	0	3.5	0	3.5
7	0	4.5	0	3	0	4.5	0	4.5
8	0	5	0	4	0	5	0	5
9	0	5.5	0	4.5	0	5.5	0	5.5
10	0	6	0	5	0	6	0	6

Table 80.—Iodin 1-500. Exposure 3 Min.

Day.	A	A′	B	B′	C	C′	D	D′
2	0	?	0	?	0	?	0	?
3	0	.5	0	.1	0	.1	0	.5
4	0	1.5	?	1	0	1.5	0	2.5
5	0	2.5	?	2	0	2	0	3.5
6	0	3.5	?	3	0	3	0	4
7	0	4.5	?	4	0	4	0	5
8	0	5	.2	4.5	0	4.5	0	6
9	0	5.5	.7	5	0	5.5	0	6.5
10	0	6	1.2	5.5	0	6	0	7

Table 81.—Iodin 1-500. Exposure 2½ Min.

Day.	A	A′	B	B′	C	C′	D	D′
2	0	?	0	?	0	?	0	?
3	0	1	?	.5	0	1	0	1.2
4	?	2	.2	1.5	0	1.5	0	2.5
5	.2	3	1.2	2.5	0	2	0	3.5
6	1	4	2.5	3.5	0	2.5	0	4
7	3	5	4.5	5	0	3.5	0	4.5
8	5	5.5	5.5	5.5	0	4	1	5.5
9	5.2	6	5.7	5.7	0	4.5	1.5	6.5
10	5.5	7	6	6	0	5	2.5	7

GROUP 7.—ACTION OF SOLUTIONS ON ACTINOMYCOSIS BOVIS (SIX-DAY-OLD CULTURES).

Table 82.—Iodin 1-1,000. Exposure 15 Min.

Day.	A	A′	B	B′	C	C′	D	D′
2	0	?	?	?	0	?	0	?
3	0	2	.7	2	0	2.5	?	1.5
4	0	2.5	1	2.5	0	3	?	2.5
5	?	3	1.5	3.5	?	4	?	3.5
6	?	4	3	4.5	?	4.5	?	4.5
7	?	4.5	3.5	5	?	5	.5	5
8	?	5	3.7	5.5	?	5.5	.6	5.5
9	?	5.5	4	6	?	6	1	6

Table 83.—Iodin 1-1,000. Exposure 30 Min.

Day.	A	A′	B	B′	C	C′	D	D′
2	0	?	0	?	0	?	0	?
3	0	1.5	0	2	0	2	0	1
4	0	2	0	2.5	0	2.5	0	2
5	?	2.5	?	3	0	3.5	?	3
6	?	3	?	4	0	4.5	?	4
7	?	4	?	4.5	?	5	?	4.5
8	?	4.5	.2	5	?	5.5	?	5
9	?	5	.5	6	?	6	?	5.5

Table 84.—Iodin 1-1,000. Exposure 60 Min.

Day.	A	A′	B	B′	C	C′	D	D′
2	0	?	0	?	0	?	0	?
3	0	1.5	0	2	0	2	0	1.5
4	0	2.5	0	3	0	2.5	0	2
5	0	3.5	0	3.5	?	3	?	2.5
6	0	4	?	4	?	4.5	?	3.5
7	0	4.5	?	5	?	5	?	4
8	0	5	?	5.3	?	5.5	.3	4.5
9	0	5.5	?	5.5	?	6	.5	5

Table 85.—Iodin 1-500. Exposure 15 Min.

Day.	A	A′	B	B′	C	C′	D	D′
2	0	?	0	?	0	?	0	?
3	0	.2	0	.5	0	.5	0	1
4	0	.5	0	2	0	1	0	2
5	0	1	0	2.5	0	2	0	2.2
6	0	2	0	3.5	0	3.5	0	2.5
7	0	4	0	5	0	4	0	4
8	0	5	0	6	0	5	0	5
9	0	5.5	0	6	0	6	0	5

Table 86.—Iodin 1-500. Exposure 10 Min.

Day.	A	A′	B	B′	C	C′	D	D′
2	0	?	0	?	0	?	0	?
3	0	2	?	1.5	0	1.5	?	1
4	0	3	.2	2.5	0	2.5	?	1.5
5	0	3.5	.6	3.5	0	4	?	2.5
6	0	4.5	1	4.5	0	5	?	4
7	0	5	1.3	5.5	0	5.5	?	5
8	0	5.5	1.7	6	0	5.7	.3	5.5
9	0	6	2	7	0	6	.5	5.7

Table 87.—Iodin 1-300. Exposure 10 Min.

Day.	A	A′	B	B′	C	C′	D	D′
2	0	?	0	?	0	?	0	?
3	0	1	0	1.5	0	2	0	.6
4	0	1.5	0	2	0	2.5	0	1.5
5	0	2.5	0	3	0	3.5	0	2
6	0	3	0	4	0	4.5	0	3
7	0	4	0	4.5	0	4.7	0	4
8	0	4.5	0	5	0	5	0	5
9	0	5	0	6	0	5.5	0	5.5

Table 88.—Iodin 1-300. Exposure 5 Min.

Day.	A	A′	B	B′	C	C′	D	D′
2	0	?	0	?	0	?	0	?
3	0	.5	0	1.5	0	1	0	1
4	0	1.5	0	2.5	0	2	0	2
5	0	2.5	0	3.5	0	2.5	?	3
6	?	3	0	4	0	3.5	?	3.5
7	?	3.5	0	5	0	4	?	4
8	?	5	0	5.5	0	4.5	?	4.5
9	.2	5.5	0	6	0	5	?	5

Table 89.—Iodin 1-200. Exposure 5 Min.

Day.	A	A′	B	B′	C	C′	D	D′
2	0	?	0	?	0	?	0	?
3	0	2	0	1.5	0	2.5	0	1.5
4	0	3	0	2.5	0	3.5	0	2.5
5	0	3.5	0	3.5	0	4	0	3.5
6	0	4	0	4	0	4.5	0	4.5
7	0	5	0	4.5	0	5	0	5
8	0	5.5	0	5	0	6	0	5.5
9	0	6	0	5.5	0	6.5	0	6

Table 90.—Iodin 1-200. Exposure 2 Min.

Day.	A	A′	B	B′	C	C′	D	D′
2	0	?	0	?	0	?	0	?
3	0	1.5	0	1	0	2	0	1
4	0	2.5	0	2	0	2.5	0	1.5
5	0	3.5	0	3	0	4	0	2.5
6	0	4.5	0	4	0	4.5	0	3.5
7	0	5.5	0	5	0	5	0	4
8	0	6	0	5.5	0	6	0	4.5
9	0	6.5	0	6	0	6.2	0	5

Table 91.—Iodin 1-200. Exposure 1 Min.

Day.	A	A′	B	B′	C	C′	D	D′
2	0	?	0	?	0	?	0	?
3	0	1	0	1.5	0	.5	0	1
4	0	2	0	3	0	1	0	1.5
5	0	3	0	3.5	0	2	0	2.5
6	0	4	0	4.5	0	3	0	3.5
7	0	4.5	0	5	0	4	0	4
8	0	5	0	5.5	0	5	0	4.5
9	0	5.5	0	6	0	6	0	5

1/1000 for *sixty* minutes gives a marked inhibitory effect. On the second, third and fourth days there is no growth. A is free from growth throughout. On the fifth and sixth days points appear on B, C and D. On the following days B shows no increase in growth, C gives a few more points, and D, on the eighth and ninth days gives a fractional growth, equaling 1/10 control growth at the end.

1/500 for *fifteen* minutes gives no growth.

1/500 for *ten* minutes shows an irregular effect. A and C are free from growth throughout. On the third day points of growth appear on B and D, which increase slowly to the ninth day, when B equals 2/7 of control growth and D 1/12 control growth.

1/300 for *ten* minutes gives no growth.

1/300 for *five* minutes shows a marked inhibitory effect. B and C show no growth throughout. On the sixth day points of growth appear on A. On the following days a very slight increase in growth is present, equaling, at the end, 1/16 of control growth. On the fifth day points appear on D, which increase but slightly on the remaining days.

1/200 for *five* minutes shows no growth.

1/200 for *two* minutes shows no growth.

1/200 for *one* minute shows no growth.

SUMMARY OF EVIDENCE ON ACTINOMYCOSIS.

The evidence shows that *Actinomyces bovis* is destroyed by either of several strengths solution of iodin acting for varying periods of time. Thus, death occurs after an exposure to a 1/500 solution for fifteen minutes; to a 1/300 solution for ten minutes; to a 1/200 solution for one minute. Considering the inhibitive effect of the solutions on the micro-organism, we find that this power begins to appear quite perceptibly on exposing to a 1/1000 solution for fifteen minutes. This effect is increased in proportion as the time of exposure is lengthened. On exposing to solutions of greater strength for a shorter period than is necessary to cause death, i. e., 1/500 solution for ten minutes, 1/300 solution for five minutes, the inhibitory effect becomes, to a medium degree, greater and greater, although time of exposure is markedly decreased. Therefore, in this series, we may consider that iodin has a medium range of inhibition before causing death.

GENERAL SUMMARY.

In summing up the antimicrobic power possessed by iodin in solution, it is well for clearness to adhere to the two divisions previously made. These were: (1) The death point of the micro-organisms as expressed by the strength of solution employed and the time of exposure to same; (2) the inhibitory effect of solutions as expressed by retardation and limitation of growth. Taking for consideration the first division, the evidence shows that absolute destruction of the several micro-organisms occurs when they are exposed to the solutions as given in Table 92.

Micro-organism.	Strength of solution.	Time of exposure.
Streptococcus pyogenes	1/1000	30 minutes
	1/500	2 minutes
Blastomycosis	1/500	4 minutes
Actinomycosis bovis	1/500	15 minutes
	1/300	10 minutes
	1/200	1 minute
Staphylococcus pyogenes aureus.....	1/200	5 minutes
Bacillus tuberculosis	1/200	60 minutes
	1/100	7 minutes
Bacillus anthracis plus spores	1/200	60 minutes
	1/100	10 minutes
Bacillus prodigiosus	1/100	10 minutes

A considerable range in efficiency of solutions is shown to exist between the *Streptococcus pyogenes* and the *Bacillus prodigiosus*. On the *Streptococcus pyogenes* the effect of the iodin is almost, if not altogether, a specific. The same, to a lesser degree, may be said of its action on *Blastomyces*. As per the arrangement of the table, the *Staphylococcus pyogenes aureus* is seen to occupy, in its relation to resisting power, a middle position. In regard to this same power of resistance, a wide space intervenes between the *Staphlycoccus aureus* and the bacilli group, of which the non-pathogenic prodigiosus is the most hearty. However, the employment of the strongest solution necessary (1 per cent. for ten minutes) is eminently practicable in direct application to wound surfaces without bad effects resulting. The fact that a micro-organism is or is not pathogenic has no weight in determining its power of resistance.

Taking for consideration the second division, it is readily seen that the degree of inhibition depends both singly and jointly on the strength of solution employed and the duration of exposure to the same. This inhibitory cycle is well shown by the bacilli group where there is a gradual and progressive increase in the inhibitory power over a wide range as the solutions become stronger and stronger and the time of exposure is increased in each strength. On this group iodin has a marked range of inhibition before producing death. The inhibitory sphere in *Staphylococcus pyogenes aureus* is irregular in character and much smaller because of the lesser strength of solution causing death. Likewise, for the same cause, *Actinomyces* presents a still more restricted sphere, although steadily progressive in character. On both *Streptococcus pyogenes* and *Blastomyces* the range of inhibition is so minute, because the death and inhibitory points are practically the same, that it may be disregarded.

CONCLUSIONS.

1. In a solution of iodin, varying from a 0.2 per cent. to a 1 per cent., we have a germicidal agent of very marked potency.

2. Its germicidal power is far superior to that of bichlorid of mercury, the acknowledged leader of all other antiseptics. This fact was shown by experiments made with a 1/1000 solution of bichlorid of mercury on *Streptococcus pyogenes*, using the same method employed with iodin solution. It was found that an exposure of fifteen minutes, although showing considerable inhibitory power, especially on the first day, permitted a good growth of streptococci to appear. An exposure of thirty minutes gave no growth. The superiority of iodin is readily evidenced by recalling the fact that a comparatively weak solution of iodin, i. e., 0.2 per cent., gave death after two minutes' exposure.

3. It approaches nearly to the ideal antiseptic in that:

(a) It is easily prepared and is stable.

(b) It is non-toxic and non-irritating in strength effective, being only one-fourth as toxic as bichlorid of mercury.

(c) It does not coagulate albumin or form inert compounds with tissues.

(d) It is effective in a very brief time.

(e) The stain it produces soon disappears.

(f) Lastly, *and most important*, it possesses a remarkable penetrating power.

4. In conclusion, it is well to state that an 0.5 per cent. solution is amply strong enough for all practical usage.

390 North Clark Street.

THE UNITED STATES PHARMACOPEIA.

THE ADVANCE IN PHARMACY INDICATED IN THE EIGHTH DECENNIAL REVISION.*

C. S. N. HALLBERG, Ph. G., M.D.

CHICAGO.

The Pharmacopeia was made public June 27, when unbound copies of the book were sent to medical and pharmaceutical journals, medical publishers, authors, and such other persons to whom avoidance of the two weeks' delay in securing bound copies of the volume would be especially appreciated.

THE NOMENCLATURE.

The Pharmacopeia, as the exponent of the science of drugs and medicine, must employ a terminology in harmony with the related sciences, hence the importance of the nomenclature. With reference to the nomenclature the convention adopted the following among the general principles to be followed in revising the Pharmacopeia:

> It is recommended that changes in the titles of articles at present official be made only for the purpose of insuring greater accuracy or safety in dispensing. In the case of newly admitted articles it is recommended that such titles be chosen as are in harmony with general usage and convenient for prescrib-

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* Read in the Section on Pharmacology of the American Medical Association, at the Fifty-sixth Annual Session, July, 1905.

ing; but in the case of chemicals of a definite composition a scientific name should be given, at least a synonym.

It is recommended that every common name and English title of articles used in the present United States Pharmacopeia that is synonymous for both the medicinal and commercial drug be either discarded or modified so as to leave no doubt as to what is wanted.

With reference to the chemical nomenclature, that of the former revision has been retained notwithstanding the fact that the spelling adopted by the American Association for the Advancement of Science and chemical societies has met with some degree of favor. The deletion of the final *e* in the halogens and alkaloids, such as "bromine," "iodine" and "morphine" and "quinine," respectively, it was thought, would prove confusing; besides, the alkaloids would lose the distinction they have always enjoyed in being written with the final *e*, from the glucosids without it, i. e., aloin, santonin, etc. So also was the substitution of *f* for ph in the case of sulphur and sulphates (sulfates), regarded probably as too much of an innovation, especially when the spelling of "Pharmacopœia" was considered. The spirit of conservatism was so evident that the convention refused even to eliminate the *o* in the spelling of "Pharmacopœia," although the British is the only other Pharmacopeia which retains this ancient spelling.

Another innovation was narrowly averted when the figures for the elements of the International Committee on Atomic Weights of 1904 were adopted, based on hydrogen at 1 instead of oxygen at 16, which would have made H 1.008. The fear of innovation did not deter the committee, however, from making some timely corrections in chemical terms, such as changing the official titles for three well-known acids: carbolic, arsenous and chromic to phenol, arseni-trioxidum and chromi-trioxidum respectively; resorcinol for resorcin, potassii hydroxidum for potassa, sodii hydroxidum for soda, the *id* termination for salts of alkaloids, i. e.: cocainæ hydrochloridum for cocainæ hydrochloras, the contracted term "fluidextractum" for extractum-fluidum, and the less doubtful substitution of chloralum hydratum for chloral as being liable to confusion with chlor. hydr., when carelessly abbreviated.

PURITY AND STRENGTH OF PHARMACOPEIAL ARTICLES.

The limitations on the purity and strength of pharmacopeial articles have received much consideration, especially during the past decade, because of the extreme requirements, in some instances characterized as hypercritical by manufacturers. Having in mind, no doubt, the greatest protection to the public, the convention gave the following instruction:

The committee is instructed to revise as carefully as possible the limits of purity and strength of the pharmacopeial chemicals and preparations for which limiting tests are given. While no concession should be made toward a diminution of medicinal value, allowance should be made for unavoidable, innocuous impurities or variations due to the particular source or mode of preparation, or to the keeping qualities of the several articles. In the case of natural products, the limits of admissible impurities should be placed high enough to exclude any that would not be accepted by other countries.

To the present revision, therefore, has been added a descriptive definition for each chemical known as the "purity rubric," which defines and limits the gross amount of impurities in each article by stating, for example, potassii iodidum: "It should contain not less than 99 per cent. of pure potassium iodide (KI=164.76)."

To make this article 100 per cent. pure would not only add vastly to the cost but in this particular salt would result in a product which would be stable. In the elaborate tests which follow, the amounts of alkali, nitrates and nitrites, chlorids and bromids are carefully limited within the total one per cent. permissible, while they absolutely exclude all noxious salts, such as barium, cyanid and heavy metals, lead, tin, zinc, etc. By this method, the highest practically attainable degree of purity is secured with the certainty that all noxious impurities are absent.

ASSAY PROCESS.

The standardization of drugs and their preparations also for certain principles has long been a desideratum. The medical profession has especially favored this idea because it represented an apparently decided advance in therapeutics. It was also in line with the entire spirit of the Pharmacopeia, and the ideals of pharmacy, viz.: to secure uniformity in strength and dosage. Its application, however, was an entirely different and much more difficult proposition than fixing the uniformity of chemical substances from the fact that the principles of but comparatively few drugs are as well defined as ordinary chemical substances, and their identity and determination, therefore, require much more careful and elaborate study. For this reason the committee was instructed:

The committee is instructed to append assay processes to as many of the potent drugs and preparations made therefrom as may be found possible, provided that the processes of assay are reasonably simple (both as to methods and apparatus required) and lead to fairly uniform results in different hands. As regards the products of such assays, tests of identity and purity should be added wherever feasible. Physiologic tests for determining strength should not be introduced by the committee.

After exhaustive study by a committee of specialists, some of whom have been engaged with the various large manufacturing pharmaceutical houses, assay processes were introduced for eighteen drugs and their preparations, and the following standards have been adopted for them:

Drugs and their preparations for which standards of active principles are required by the U. S. P. VIII.

Preparation.	Principle.	Minimum.
Aconitum	Aconitin	0.5 per cent.
Fluidextractum	Aconitin	0.4 in 100 c.c.
Tinctura	Aconitin	0.045 in 100 c.c.
Belladonnæ folia	Mydriatic alkaloids	0.35 per cent.
Emplastrum	Mydriatic alkaloids	0.38-0.42 per cent.
Extractum	Mydriatic alkaloids	1.4 per cent.
Tinctura	Mydriatic alkaloids	0.035 per cent.
Belladonnæ radix	Mydriatic alkaloids	0.5 per cent.
Fluidextractum	Mydriatic alkaloids	0.5 in 100 c.c.
Cinchona	Alkaloids	4 per cent. ether soluble.
Fluidextractum	Alkaloids anhydrous	4 in 100 c.c.
Coca	Alkaloids ether soluble	0.5 per cent.
Fl[illegible]	[illegible]er soluble	0.5 per cent.
Colc[illegible]	[illegible]	0.5 per cent.
Ex[illegible]	[illegible]	1.4 per cent.
Colchici semen	Colchicin	0.55 per cent
Fluidextractum	Colchicin	0.5 in 100 c.c.
Tinctura	Colchicin	0.05 in 100 c.c.
Conium	Coniin	0.5 per cent.
Fluidextractum	Coniin	0.45 in 100 c.c.
Guarana	Alkaloids	3.5 per cent.
Fluidextractum	Alkaloids	3.5 in 100 c.c.
Hydrastis	Hydrastin	2.5 per cent.
Fluidextractum	Hydrastin	2 in 100 c.c.
Tinctura	Hydrastin	0.4 in 100 c.c.
Hyoscyamus	Mydriatic alkaloids	0.08 per cent.
Extractum	Mydriatic alkaloids	0.3 per cent.
Fluidextractum	Mydriatic alkaloids	0.075 in 100 c.c.
Tinctura	Mydriatic alkaloids	0.007 in 100 c.c.
Ipecacuanha	Alkaloids	2 per cent.
Fluidextractum	Alkaloids	1.75 in 100 c.c.
Jalapa	Alcol soluble resin	8 per cent.
	Ether soluble resin	1.5 per cent.
Nux vomica	Strychnin	1.25 per cent.
Extractum	Strychnin	5 per cent.
Fluidextractum	Strychnin	1 in 100 c.c.
Tinctura	Strychnin	0.1 in 100 c.c.

Opium pulvis and deodorata	Morphin cryst.	12 to 12.5 per cent.
Extractum	Morphin cryst.	20 per cent.
Tinctura and deodorized tinctura	Morphin cryst.	1.2 to 1.25 in 100 c.c.
Physostigma	Ether soluble alkaloids	0.15 per cent.
Extractum	Ether soluble alkaloids	2 per cent.
Tinctura	Ether soluble alkaloids	0.014 in 100 c.c.
Pilocarpus	Alkaloids	0.5 per cent.
Fluidextractum	Alkaloids	0.4 in 100 c.c.
Stramonium	Mydriatic alkaloids	0.35 per cent.
Extractum	Mydriatic alkaloids	1.4 per cent.
Fluidextractum	Mydriatic alkaloids	0.35 in 100 c.c.
Tinctura	Mydriatic alkaloids	0.03 in 100 c.c.

The introduction of several principles of volatile oils, some artificial or synthetized, led to the fixing of standards for a number of the natural volatile oils, which are required to be of the following strengths:

Oil.	Principle.	Strength.
Oleum amygdalæ amaræ	Benzaldehyd	85 per cent. w't.
	Hydrocyanic acid	2.4 per cent. w't.
Oleum cajupti	Cineol	55 per cent. vol.
Oleum caryophilli	Eugenol	80 per cent. vol.
Oleum cinnamomi	Cinnamic aldehyd	75 per cent. vol.
Oleum eucalypti	Cineol	50 per cent. vol.
Oleum limonis	Citral	4 per cent. w't.
Oleum menthæ piperitæ	Menthyl acetate	8 per cent. w't.
	Total menthol	50 per cent. w't.
Oleum		65 per cent. vol.
Oleum		5 per cent. w't.
		15 per cent. w't.
Oleum santali	Santalol	90 per cent. w't.
Oleum thymi	Phenols	20 per cent. vol.

In addition to this class of principles, already official menthol, thymol and methyl salicylate, the following have also been introduced:

Benzaldehydum: An aldehyd obtained from the volatile oil of bitter almond or produced artificially, containing 85 per cent. pure benzaldehyd.

Cinnaldehydum: An aldehyd obtained from oil of cinnamon or prepared synthetically, containing not less than 95 per cent. pure cinnamic aldehyd.

Eugenol: An unsaturated aromatic phenol obtained from oil of cloves and other sources.

Safrolum: The methylene ether of pyrocatechol, found in oil of sassafras, camphor oil and other volatile oils.

The difficulty presented in work of this branch of organic chemistry may be realized from the fact that of these eighteen drugs not one glucosidal drug is included, they being, with one exception, (jalap) alkaloidal. While to devise assay processes which would be practicable and which, in the hands of the average skilled pharmacist, would show fairly uniform results, was exceedingly difficult with some of these, notably the mydriatic group, with glucosidal drugs these difficulties were unsurmountable. For this reason, there are no assay processes nor standards for the principles of digitalis, ergot, strophanthus and several more of this class, much as it was desired to include them. By far the largest number of drugs are glucosidal in character and yet, with a few exceptions, they are but little known. There are many drugs indigenous to North America, not to mention Central and South America, whose principles, if studied systematically, would furnish valuable therapeutic agents, perhaps equally as valuable as the coal-tar and other synthetic chemicals. This field may well be called a *terra incognita* which lies fallow for a medical Vespuccio or Vasco de Gama, but more likely which will be chartered and explored by the *omnium gatherum* Teutons when they have exhausted the possimilities of the Benzene ring and its congeners.

Owing to the lack of chemical assay methods for standardizing some of these drugs, certain manufacturers have adopted so-called physiologic methods for determining the strength and potency. Since no method based on pharmaco-dynamic effects could be applied by the average retail pharmacist for whom the U. S. Pharmacopeia is, first of all, designed, and since any requirement for an article which could not be verified by him would, it was contended, violate this fundamental principle of the Pharmacopeia, it was recommended "that physiologic tests should not be introduced."

Owing to the importance of the subject, however, and with the aid of a special committee composed of Major Walter Reed, surgeon U. S. A., Prof. Theobald Smith, Thomas C. Craig, surgeon U. S. A., H. A. Hare, E. M. Houghton, J. J. Kinyoun, William H. Park, Herbert D. Pease, and M. J. Rosenau, surgeon U. S. Public Health and Marine-Hospital Service, the following standard was adopted:

Serum Antidiphthericum—Antidiphtheric serum. Diphtheria antitoxin.

A fluid separated from the coagulated blood of a horse Equus caballus (Linnè), immunized through the inoculation of diphtheria toxin. It should be kept in sealed glass containers, in a dark place, at temperatures between 4.5 and 15 C. (40 and 59 F.).

A yellowish or yellowish brown, transparent or slightly turbid liquid, odorless or having a slight odor, due to the presence of the antiseptic used as a preservative.

Specific gravity: 1.025 to 1.040 at 25 C. (77 F.).

Antidiphtheric serum gradually loses its power, the loss in one year varying between 10 and 30 per cent. Each container should be furnished with a label or statement, giving the strength of the antidiphtheric serum, expressed in antitoxic units, the name and percentage by volume of the antiseptic used for the preservation of the liquid (if such be used), the date when the antidiphtheric serum was last tested, and the date beyond which it will not have the strength, indicated on the label or statement.

The standard of strength expressed in units of antitoxic power should be that approved or established by the United States Public Health and Marine-Hospital Service.

Average dose, 3,000 units.

Immunizing dose for well persons, 500 units.

The admission of the synthetics, owing to the complex status of many of them, was a difficult problem to solve. The attitude of the convention was not sharply outlined in the following instruction to the committee:

The Committee of Revision is authorized to admit into the Pharmacopeia any product of nature of known origin, also any synthethized product of definite composition which is in common use by the medical profession, the identity, purity or strength of which can be determined. No compound or mixture shall be introduced if the composition or mode of manufacture thereof be kept secret, or if it be controlled by unlimited proprietary or patent rights.

Realizing the desire on the part of the medical profession to have, at least, made official as many of this class of articles as have proved of therapeutic value and have assumed a permanent place in the materia medica, the committee compromised by admitting such products for which the patent on the process or product, or both, expired or will expire during the present decade (1910), provided that, by such expiration, the trade name would also become free.

With this as a guide, the legal status of the most extensively employed synthetics was investigated, and those which would be free during the stated period were admitted. Some omissions will be noted, for example, ichthyol, which is not covered by any patent, the name alone being registered, and the article, therefore, is in the category of so-called patent medicines, except that its composition is well known.

Except in the case of antipyrin, which became free several years ago, the trade names of these articles have not been admitted, but instead more or less euphonious contractions of the chemical names have been adopted for their title, together with the chemical structural names, as follows:

Acetphenetidium—Acetphenetidin: $C_{10}H_{13}NO_2 = 177.79$.

A phenol derivative [Acetparaphenetidin $C_6H_4(OC_7H_5).NH.CH_3.CO$1:4] the product of the acetylization of para-amido phenol.

Average dose, 0.500 gm., 500 milligrams (7½ grains).

Æthylis Carbamas—Ethyl Carbamate: $C_3H_7NO_2 = 88.42$.

An ester of carbamic acid [$CO(OC_2H_6)NH_2$] obtained by the reaction of ethyl *alcohol on urea* (carbamide) or one of its salts. It should be kept in well-stoppered bottles.

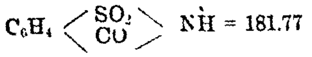
Average dose,, 1 gm. (15 grains).

Antipyrina—Antipyrin: $C_{11}H_{12}N_2O = 186.75$.

Phenyldimethylpyrazolon [$C_3HN_2O(CH_3)_2.C_6H_5$], obtained by the condensation of phenylhydrazin with aceto-acetic ether, and methylation of the product.

Average dose, 0.25 gm., 250 milligrams (4 grains).

Benzosulphinidum—Benzosulphinid Saccharin.



$$C_6H_4 \left\langle \begin{matrix} SO_2 \\ CO \end{matrix} \right\rangle NH = 181.77$$

The anhydrid of ortho-sulphamide-benzoic acid (benzoyl sulphonicimide).

Average dose, 0.200 gm., 200 milligrams (3 grains).

Chloralformamidum—Chloralformamid: $C_3H_4Cl_3NO_2 = 190.96$.

A crystalline solid [$CCl_3.CH(OH)NH.COH$], made by the direct union of formamide with anhydrous chloral. It should be kept in amber-colored, well-stoppered vials.

Average dose, 1 gm. (15 grains).

Guaiacolis Carbonas—Guaiacol Carbonate: $(C_7H_7O)_2CO_3 = 272.05$.

A guaiacol derivative [$(C_6H_4(OCH_3)O)_2.CO$], obtained by the action of carbonyl chlorid on sodium-guaiacolate.

Average dose, 1 gm. (15 grains).

Hexamethylenamina—Hexamethylenamin: $C_6H_{12}N_4 = 139.18$.

A condensation product [hexamethylene-tetramin, $(CH_2)_6N_4$], obtained by the action of ammonia on formaldehyd. It should be kept in well-stoppered bottles.

Average dose, 0.250 gm., 250 milligrams (4 grains).

Homatropinæ Hydrobromidum—Homatropin hydrobromid: $C_{16}H_{21}NO_3.HBr = 353.49$.

The hydrobromid [$HBr.C_{16}H_{21}NO_3$] of an aklaloid obtained by the condensation of tropin and mandelic acid. It should be kept in well-stopered vials, protected from light.

Average dose, 0.0005 gm., 0.5 milligram (1/128 grain).

Iodolum—Iodol: $C_4I_4.NH = 566.17$.

Tetraiodopyrrol, a derivative of the base pyrrol, obtained by the direct action of iodin on the base in the presence of alcohol. Iodol should be preserved in amber-colored bottle, protected from light.

Average dose, 0.250 gm., 250 milligrams (4 grains).

Methylthioninæ Hydrochloridum—Methylthionin Hydrochlorid. Methylen Blue: $C_{16}H_{18}N_3SCl = 317.36$.

Tetramethylthionin hydrochlorid, obtained by the action of hydrogen sulphid on an oxidation product of paramidodimethylanilin.

Average dose, 0.250 gm., 250 milligrams (4 grains).

Sulphonethylmethanum—Sulphonethylmethane: $C_8H_{18}S_2O_4 = 240.46$.

Di-ethyl-sulphone-methyl-ethyl-methane [$(CH_3)(C_2H_5)C(SO_2C_2H_5)_2$], a product of the oxidation of the mercaptol obtained by the condensation of methylethylketone with ethyl mercaptan. It should be preserved in well-stoppered vials.

Average dose, 1 gm. (15 grains).

Sulphonmethanum — Sulphonmethane: $C_7H_{16}S_2O_4 = 226.55$.

Diethylsulphonedimethylmethane [$(CH_3)_2C(SO_2C_2H_5)_2$], the product of the oxidation of the mercaptol obtained by the condensation of acetone with ethylmercaptan. It should be preserved in well-stoppered vials.

Average dose, 1 gm. (15 grains).

Thymolis Iodidum—Thymol Iodid: $C_{20}H_{24}O_2I_2 = 545.76$.

Dithymol-diiodid [$(C_6H_2.CH_3.C_3H_7.OI)_2$], obtained by the condensation of two molecules of thymol and the introduction of two atoms of iodin into the phenolic groups of thymol; it contains 45 per cent. of iodin. Thymol iodid should be kept in amber-colored vials, protected from the light.

Vanillinum—Vanillin: $C_8H_8O_3 = 150.92$.

Methylprotocatechuic aldehyd [$C_6H_3OH.OCH_3COH$ 4:3:1], occurring naturally in vanilla or made artificially from several orthodihydroxybenzene derivatives.

Average dose, 0.030 gm., *30 milligrams* (½ grain).

Special Articles

IMMUNITY.

CHAPTER XXIV.

BACILLUS ENTERITIDIS IN MEAT POISONING.

More or less extensive epidemics of poisoning by meats have long been known. Whereas, it was formerly thought that the intoxication was due to ptomains which were formed as an incident to putrid decomposition of meat, it is now well established that most epidemics of this character are caused by meats which are infected with bacteria which are pathogenic even when entirely freed from decomposing proteids.

The "Enteritidis Group."

Botulism has already been described as a special form of meat poisoning in which nervous symptoms predominate, and it has also been emphasized that paratyphoid fever may have its source in infected meat. Before these conditions were recognized, however, Gärtner in 1888 had the opportunity of studying an epidemic caused by the meat of a cow which had been slaughtered in extremity. The symptoms differed from those of botulism or paratyphoid, as described below. He obtained *from the muscle and spleen of* the cow, and from the spleen of a man who had been fatally poisoned by meat, an organism which has since been known as *Bacillus enteritidis* (Gärtner). The same bacillus, or organisms which resemble it closely, have been obtained repeatedly during similar epidemics, both from the suspected meat and from the organs in fatal cases (intestines, blood, spleen, etc.). Drigalski, from a comparative study of several strains which had been obtained from different sources, concluded that all are members of a closely related group of organisms, the group of *Bacillus enteritidis*. His conclusions were based on cultural properties and agglutination tests.

The typical organism is a short rod, often ovoid in shape; it possesses four to twelve long flagellæ and has moderate motility. It is not stained by Gram's method. It ferments dextrose and certain other sugars, lactose, galactose, maltose, cane sugars, etc., with gas formation. Variations among individual strains need not be discussed here.

Pathogenicity.

According to v. Ermengem, and also Drigalski, the pathogenicity of the organism depends on its elaboration of a soluble but heat resistant toxin. Bouillon cultures twelve days old, in which the bacteria have been killed by heat, also similar cultures from which the bacteria have been removed by filtration, are toxic for mice and guinea-pigs (Drigalski). It is noteworthy, however, that relatively large quantities of the bouillon were *necessary to kill* guinea-pigs (4.0 c.c.), which is in contrast to the toxins of diphtheria and tetanus. The rapidity with which symptoms develop following the ingestion of infected meat is a further indication of the existence of this soluble toxin.

Symptoms.

Symptoms occasionally develop so quickly as to suggest some strong metallic poisoning. Within a few hours vomiting, violent diarrhea and colicky pains set in, followed by more or less collapse, weakness, headache and not uncommonly by trythematous, urticarial or herpetic eruptions. Fever is absent or inconspicuous. The mortality is not high, from 2 to 5 per cent., although convalescence is said to be slow. Nephritis and catarrhal pneumonia have been noted as sequelæ. Autopsy shows the anatomic changes of an acute gastroenteritis, sometimes of hemorrhagic character, with swollen Peyer's patches; the large intestine is not greatly involved. The spleen may be swollen and the kidneys degenerated. The anatomic findings are not specific.

Source of Infection.

It has been shown conclusively in numerous instances that the meat infection takes place *intra vitam*, that is, that the cattle or horses (Drigalski) were sick with an intestinal or general infection with *Bacillus enteritidis* before they were slaughtered. "In a very large number of cases it can be demonstrated that the animals from which the meat was taken had been slaughtered in extremity and had died rapidly, and indeed, that they had (in certain instances), died before they could be slaughtered. Most often they suffer from septic inflammatory processes or from traumatic, puerperal or other sorts of septicemia, or from other ill defined pathologic conditions which are accompanied by symptoms of enteritis or intestinal or pulmonary inflammations." (v. Ermengem.) Subsequent infection of the meat by *Bacillus enteritidis*, i. e., after slaughtering, has not been noted.

Growth in the Meat.

The organism occurs in the blood, muscles, spleen, lungs, and probably in the other organs of the infected animals and of man. Poisoning most commonly arises when the meat has been kept for several days, which usually is the case by the time it is made into some form of sausage. In the meantime the bacilli have proliferated and additional toxin has been produced. In at least one instance a certain number of patients who ate the meat while it was fresh suffered moderate or no intoxication, whereas those who ate it several days later became violently ill. In an epidemic caused by horse meat Drigalski found that "only those persons suffered from intoxication who ate the meat after it had lain for eight days or more."

Toxin in Meat.

The micro-organism is very resistant to heat and the temperature which is attained in ordinary cooking may not be sufficient to kill all the bacteria which are the farthest from the surface. Even in the event that the meat has been thoroughly sterilized, the heat resistant toxin may be present in sufficient quantity to cause the intoxication. Not much is known concerning the distribution of *Bacillus enteritidis*. v. Ermengem suspects that it may be a cause of poisoning by oysters and fish, but this remains undetermined.

Agglutinins.

The blood acquires specific agglutinins during the course of infection. Even eight days after the beginning of symptoms agglutination may be obtained in dilutions varying from 1/200 to 1/4000. The agglutinins disappear very rapidly. Working with artificially prepared immune serum, Drigalski determined the existence of coagglutinins for typhoid and paratyphoid bacilli.

We should bear in mind the likelihood that meats poisoned with *Bacillus enteritidis*, as well as by paratyphoid bacilli, may be encountered in America as well as in foreign countries.

BACILLUS COLI COMMUNIS.

Bacillus coli communis, *Bacterium coli commune*, or the colon bacillus, is the type of a large group of organisms the members of which show individual differences but possess certain dominant features in common. The typical colon bacillus ferments various sugars, with the production of gas, is a strong acid producer and curdles milk. It is flagellated, has moderate motility and does not stain by Gram's method. One type or another is the normal inhabitant of the intestinal tract of many animals, and although the organisms are widely disseminated in nature their occurrence is related directly or indirectly to the distribution of feces.

Resistance.

Its optimum temperature for growth is 37 C., and above 46 C. it does not proliferate. It is killed at a temperature of from 60 to 61 C. in from five to fifteen minutes; it is not killed by such low temperatures as from 20 to 24 C. It resists absolute desiccation for periods varying from a few days to several months (different observers). Direct sunlight kills 99 per cent. of the germs in two hours (Billings and Peckham), and they are very susceptible to ordinary antiseptics. The normal serums of many animals are bactericidal for the colon bacillus.

Escherich, a noted authority on this organism, lays down the principle that that strain which may be cultivated from the feces of the nursing child should be considered as the typical *Bacterium coli commune*, maintaining that a constant type of organism is found under these conditions. It is said to occur here in relatively pure culture.

Distribution in the Intestines.

Within a very short time after birth the organism is found in the intestines of infants, and its method of entrance has been the subject of much discussion. In view of its wide distribution it is not difficult to conceive of many circumstances which favor its entrance. Having once reached the intestines, it finds there its optimum conditions for growth. The small intestines in man are rather free from colon bacilli and other organisms as well. This, perhaps, is due to some extent to the alkalinity of the medium and to the rather rapid flow of the intestinal contents. The colon bacillus reaches its maximum development in the large intestine, where, in fact, the whole bacterial flora of the intestines is most concentrated.

Normal Functions.

In view of the fact that the colon bacillus is a normal inhabitant of the intestines, the conception has occurred to many that it may be of distinct value to the economy, either because of the action it has on certain foods (splitting of carbohydrates), or because in some obscure way it influences favorably the assimilation of foods, or in that it antagonizes other bacteria of distinct pathogenic powers which also exist normally in the intestines or reach them through accident. This is not the place to consider these questions in detail, and they are on none too definite a basis. It may be stated, however, that the colon bacillus and another closely related organism, *Bacillus lactis aerogenes*, distinctly antagonize the action of certain proteolytic bacteria which appear to be associated with the putrid decomposition of milk and other proteid-containing foods. Bacteria of the later type exist in the intestines. Unsterilized milk has a natural resistance to putrid decomposition and sterilized milk, which contains the colon bacillus or *Bacillus lactis aerogenes*, has a similar resistance. These two bacteria flourish in the presence of carbohydrates, which they decompose with the liberal formation of acids, and through these acids they "limit intestinal putrefaction and influence (favorably) pathologic processes which are caused or maintained by the existing 'alkaline fermentation'" (Escherich and Pfaundler). That the organisms in question antagonize the action of putrefactive bacteria has been shown in test-tube experiments (Hirschler).

Pathogenicity.

Since the time that Emmerich upheld the colon bacillus (or a colon-like microbe) as the cause of Asiatic cholera (1885), opinion as to the pathogenic powers of the organism have undergone many fluctuations. Following Koch's demonstration of the vibrio of cholera as the etiologic factor in cholera, the colon bacillus was, so to say, repressed as a pathologic agent. Later, and especially in France, great significance was again attached to it. The condition still shows a great deal of chaos, although on account of more refined technic and the elimination of other organisms, as the dysentery and paratyphoid bacilli and *Bacillus enteritidis*, from the colon group proper, we are, perhaps, on the way to a more satisfactory understanding of the pathogenicity of this organism. Although certain authors hold at the present time that the colon bacilli which normally inhabit the intestines are devoid of virulence, such a radical position is open to question. Avirulent strains have often been encountered, however.

Virulence for Animals.

As harmless as the colon bacillus appears to be when confined in the intact intestines, its virulence for animals, although low, has been demonstrated in many instances. A bouillon culture of the average bacillus which has grown from one to two days, and when freshly cultivated from the stools, causes the death of a 300 to 400 gram guinea-pig in two or three days, when given intraperitoneally in a dose of from 2 to 3 c.c. Subcutaneous inoculations commonly cause abscesses and may lead to death. Pathologic processes have not been set up by feeding cultures to animals. Inflammations have been caused in the bladder and in the bile passages by the injection of cultures. It is stated (Escherich) that whether the cultures are introduced into the skin, peritoneum or vessels, the symptoms of severe gastroenteritis are produced, not unlike Asiatic cholera. This fact may have influenced Emmerich in considering the orgainsm as the cause of cholera. The general symptoms are those of an acute febrile intoxication.

The organism is most pathogenic when freshly cultivated, and soon loses its virulence after repeated transplantations. As in the case of some other organisms, virulence may be reestablished by "passage" through suitable animals.

Virulence for Man.

The cultivation of the colon bacillus from the blood and organs of man at autopsy has not the significance which was once attached to it. It has been recognized that the colon bacillus in particular, and less commonly other intestinal organisms, may enter the circulation a short time before death, at a time when resistance is very low, and may obtain the general distribution which is so often encountered at autopsy; this is the so-called "agonal invasion," which may occur without much regard to the primary cause of death. The conditions which favor agonal invasion remain to a large extent obscure. Distinct defects of the intestinal mucosa probably are not essential, although this view has its representatives. In states of low vitality in which resistance to infection is decreased (disappearance of complement!), the organisms find conditions favorable to proliferation when they have once reached the circulation. In spite of the low virulence of the colon bacillus it commonly has a certain amount of toxicity and it may often be of significance even as an agonal infection.

Postmortem invasion of adjacent structures, as the gall bladder and liver through the biliary passages, and of the peritoneum through the intestinal wall, also occurs.

True Infections.

It has been shown that the colon bacillus occasionally causes the following conditions: Suppurative cholecystitis which may extend to the liver, peritonitis, septicemia, meningitis, cystitis, pyelitis and ascending suppurative nephritis, and abscesses in various organs, including suppurative processes in the middle ear. In one or more instances it has been thought that it caused vegetative endocarditis. Probably colon infections of the gall bladder do not occur in the absence of biliary stasis. Ordinarily cases of peritonitis in which the colon bacillus is encountered also show the presence of other pathogenic organisms, as streptococci or staphylococci; this is always the case in perforation peritonitis. Doubtless wrong conclusions have been drawn in many instances from the fact that the colon bacillus readily overgrows many other bacteria in ordinary culture media.

Cystitis.

Escherich attributes great importance to this organism as the cause of cystitis, especially in children, and states that it is probably the most common cause in all cases of cystitis. In 58 of 60 cases of cystitis in children the colon bacillus was found either alone or in mixed cultures. He also considers it the most common cause of pyelitis and ascending suppurative nephritis. An increased agglutinating power of the patient's serum for the organism cultivated from the urine is noted in these cases.

Diarrheas.

Great interest attaches to the colon bacillus in relation to enterocolitis and dysenteric diseases. Escherich speaks of an *enteritis follicularis*, or *colitis contagiosa*, or colicolitis, epidemics of which have been noted at different times. A number of these epidemics occurred before the identification of the dysentery bacillus, and certain of them may have been true dysenteric infections. Nevertheless, dysentery bacilli are not found in all cases of enterocolitis, and the probability that genuine cases of colon enteritis occur can not as yet be neglected entirely.

A specific colon toxin has not been obtained.

Immunization with the colon bacillus causes the formation of bactericidal amboceptors and agglutinins.

Agglutination.

Not all strains of the colon bacillus are identical in their agglutinogenic receptors. A serum which agglutinates one colon strain does not necessarily agglutinate all strains. The reaction, according to Paltauf and others, is largely an individual one. The serum of a patient who is suffering from a colon infection will agglutinate the particular strain causing the disease, but may not affect other strains. Hence, for diagnostic purposes, the test must be performed with the culture which has been obtained from the patient. Pfaundler says in reference to colicolitis that if other colon infections can be excluded, and if the serum of the patient gives the agglutination reaction in a dilution of 1 to 50 with the bacillus which has been cultivated from the stools, colon infection is indicated (Paltauf).

FOURTH OF JULY INJURIES AND TETANUS.

For the third consecutive year The Journal publishes statistics regarding injuries received during the Fourth of July celebration, with special reference to tetanus resulting from these injuries. The total number of cases this year is 104, surprisingly near to the number of cases in 1904, which was 105. In 1903 there were 415 cases. It is interesting likewise to compare the totals of accidents resulting from blank cartridges in the same years, which are in a like proportion. In 1903 there were 1,672 injuries from blank cartridges; in 1904, 1,005, and this year, 809. Regarding totals of accidents and their causes, we shall have further comment later in this paper.

The figures this year are from the same source as heretofore and treated in the same manner, so that any comparisons between the figures of this and either of the preceding years may be on a presumably like basis. The list of tetanus cases is as follows:

TABLE 1.

	NAME.	AGE.	CAUSE OF WOUND.	SITE OF WOUND.	DURATION IN DAYS.	RESULT
	ALABAMA.					
1	Lattimer	10	bl. ctg	hand	17	D
	CALIFORNIA.					
1	Eagle	14	bl ctg	hand	6	D
2.	Erway	21	bl ctg	hand	10	D
3	*Spurgeon	11	bl. ctg	chest	7	D
4.	Iridlocotta	6	fireworks		9	D
	COLORADO.					
1.	Smith	16	cannon	leg		
	CONNECTICUT.					
1.	Monitz	13	gunshot	finger	11	D
2.	Beaulien	19	cannon			
3.	Rabinowitz		bl ctg	hand		
	DELAWARE.					
1.	Eggner	11	bl. ctg	hand	12	D
	ILLINOIS.					
1.	Honny	9	bl. ctg		8	D
2.	Zeck	13	bl. ctg	finger	7	D
3.	Boyer	12	bl ctg	groin	20	D
4.	Mason	16	fireworks		6	D
5.	Concartino	19	gunshot		7	D
6.	Lyon	22	bl. ctg	hand	9	D
7.	Schreta	28	gunshot		12	D
8	Murray	14	gunshot	hand	9	D
9.	Sumner	boy	bl. ctg	hand		D
10.	Leviston	11	gunshot		8	D
11.	Justice	9	bl. c g	hand	13	D
12.	Olson	11	bl. ctg	leg	8	D
13.	Kirschner		fireworks	leg	20	D
14.	Stevens	17	bl. ctg		24	D
15.	Mawer		bl. ctg			D
16.	Colby	man	*giant cr'k	hand amp.	7	D
17.	Drennan	54	giant cr'k	eye, hand	8	D
18.	Campbell	12	bl ctg	hand		
19.	Zeck	13	fireworks		16	D
20.	Downey	adult	giant cr'k	hand	16	D
	INDIANA.					
1.	Connelly, Lester	8	bl. ctg		14	D
2	Crieger	11	bl. ctg	hand	9	D
3.	Sauer	11	bl. ctg	hand	16	D
	IOWA.					
1.	Nisson	20	bl ctg	hand	15	D
2.	Iverson	10	bl. ctg		9	D
3.	Wentland	adult	giant cr'k		22	D
	MAINE.					
1.	Hatch	16	bl. ctg	hand	11	D

* Reported by one paper as blood poisoning.

	NAME.	AGE.	CAUSE OF WOUND.	SITE OF WOUND.	DURATION IN DAYS.	RESULT.
	MARYLAND.					
1.	Bowen	12	bl. ctg		10	D
	MASSACHUSSETTS.					
1	Lebida		cannon	finger		
2.	Roy	boy	bl ctg	hand	8	D
3.	Challman	10	powder	hand	10	D
4.	Mitchell	12	bl. ctg		7	D
5.	Bailey	12	fireworks	hand	12	D
6	Norris	16	bl. ctg	hand	11	D
7.	Morrell		bl. ctg	hand	8	D
	MICHIGAN.					
1.	Bartels	12	bl. ctg	finger	9	D
2.	Tobias	10	bl. ctg	hand		
3.	Sneath	11	bl. ctg	hand		
4.	Wingett	11	bl. ctg		12	D
5.	VanAntwerp	14	bl. ctg	finger	9	D
6.	Robinson	11	giant cr'k	leg	18	R
7.	Bashore	14	bl. ctg		10	D
8.	Szewitski	12	powder	hand	5	D
9.	Mangus	10	bl. ctg	leg	14	D
	MINNESOTA.					
1.	Ensland		giant cr'k		12	D
2.	Kruk	27	giant cr'k	hand	11	D
	MISSOURI.					
1.	Gibeant	8	bl. ctg	hand	11	D
2.	Dilley	12	fireworks	leg	11	D
3.	Truesdale	15	bl ctg	hand	7	D
	MONTANA.					
1.	Smith	adult	giant cr'k	hand	25	D
	NEBRASKA.					
1.	McCarville	12	bl. ctg	hand	13	D
2.	Robla	11	bl. ctg	hand		D
3.	Robinson	man	bl ctg	finger	10	D
	NEW JERSEY.					
1.	Taylor	11	bl. ctg	hand	11	D
2.	Johnson		bl ctg	hand		
3.	Jorzak	18	bl. ctg	hand		
	NEW YORK.					
1.	Casey	42	giant cr'k	leg	4	D
2.	Kohler	8	bl ctg	hand	8	D
3.	Crowley	15	bl ctg	hand	10	D
4.	Biegel		giant cr'k		12	D
5.	Mustico	9	bl. ctg	finger	8	D
6.	Flood	9	bl. ctg	hand		
	OHIO.					
1.	Meyer	16	bl. ctg	hand	6	D
2.	Geiger	13	bl. ctg	hand		
3.	Palmer	10	giant cr'k	hand	7	D
4.	Tellkamp	12	bl ctg	leg	10	D
5.	Robinson	14	torp	hand		
	OKLAHOMA.					
1.	Cronkett	14	cap	finger	10	D
	PENNSYLVANIA.					
1.	Overpeck	19	bl. ctg	hand	8	D
2.	Yothers	13	cannon			
3.	Sherman		bl. ctg		12	D
4.	Payne		powder		14	D
5.	Lengel	78	fireworks	ear		D
6.	Ternent	15	giant cr'k	hand	14	D
7.	Bochus	14	bl. ctg	leg	8	D
8.	Nail	17	bl. ctg	hand	19	D
9.	Hartman	boy	bl. ctg	hand	21	D
10.	Parlovix		bl. ctg			D
11.	Caloney	14	bl. ctg	hand	22	D
12.	Daugherty	3	giant cr'k	arm, leg	8	D
	UTAH.					
1.	Jacob	40	giant cr'k		20	D
	WISCONSIN.					
1.	Anderson	13	bl. ctg	hand	11	D
2.	Schmick	10	bl. ctg	hand		
3.	Jolly	14	bl. ctg	finger	16	D
4.	Mooney		bl. ctg	hand	6	D
5.	Bussian	10	bl. ctg	leg	8	D
6.	Nolan	11	bl. ctg	hand	4	D
7.	Holk	15	giant cr'k	face	12	D
8.	Ennis	8	giant cr'k		12	D
9.	Vanderloo	22	bl. ctg	hand	11	D
10.	Shipped		bl. ctg		10	D
11.	Aohert	boy	fireworks			
12.	Colby		giant cr'k			
13.	Sniegorski	8	bl. ctg		12	D

Tetanus cases occurred in 23 different states, or in 2 more than last year, but in 7 less than in 1903. The eight states having the highest number of cases are Illinois 20, Wisconsin 13, Pennsylvania 12, Michigan 9, Massachusetts 7, New York 6, Ohio 5, and California 4. Six states had 3 cases each, one state had 2, and eight states had 1 each. Wisconsin had more cases this year than in either of the previous years. Connecticut, Illinois, Iowa, Massachusetts and Michigan show an increase over last year. Illinois had 5 more cases than last year. Table 2 shows a comparison of the number of cases in each state for the three years.

TABLE 2.

	1903.	1904.	1905.
Alabama	....	....	1
Arizona	....	....	....
California	2	4	4
Colorado	4	....	1
Connecticut	3	....	3
Delaware	....	....	1
Dist. of Columbia	1	....	....
Florida	....	....	....
Idaho	1	....	....
Illinois	49	15	20
Indian Territory	1	....	....
Indiana	11	6	3
Iowa	14	2	3
Kansas	11	1	....
Kentucky	4	2	....
Maine	2	4	1
Maryland	1	....	1
Massachusetts	16	5	7
Michigan	29	7	9
Minnesota	15	2	2
Missouri	29	1	3
Montana	2	1	1
Nebraska	4	3	3
New Hampshire	2	....	....
New Jersey	8	9	3
New York	36	9	6
North Dakota	....	....	....
Ohio	67	9	5
Oklahoma	....	....	1
Oregon	2	....	....
Pennsylvania	82	17	12
Rhode Island	3	....	....
South Dakota	....	....	....
Tennessee	....	....	....
Texas	....	....	....
Utah	....	1	1
Vermont	3	2	....
Washington	2	1	....
West Virginia	3	....	....
Wisconsin	10	4	13
Wyoming	....	....	....
Total	415	105	104
No states having cases	30	21	23

It appears that most of the restrictions by city ordinances against fireworks during the past few years have been against the toy pistol. This probably accounts for the decrease in the number of cases from this cause the last year and possibly for the enormous decrease from 1903. Table 3 shows a comparison between the causes of tetanus cases this year and the two previous years.

TABLE 3.—CAUSES OF TETANUS CASES.

	Blank cartridge.	Giant cracker.	Cannon.	Firearms.	Powder, etc.
1905	65	17	4	5	13
1904	74	18	5	1	7
1903	363	17	5	3	27

While the number of cases from blank cartridges is decreasing each year, cases from the other causes remain about the same or on the increase.

Besides the lockjaw cases directly due to 4th of July accidents, 32 cases were reported this year due to other injuries, as penetrating wounds from nails, splinters, from crushing injuries in falls or otherwise, compared with 55 such cases last year and 15 in 1903.

DEATHS AND INJURIES ASIDE FROM TETANUS.

In Table 4 will be found a summary of all injuries, including tetanus, as well as of all causes. This is arranged, as heretofore, by states, so that comparisons may be made. Beneath the totals at the bottom of this table we have inserted for comparison the totals for 1903 and 1904. Table 5 is arranged to show a more ready comparison by states of the total accidents and deaths for three years.

Pennsylvania, the birthplace of independence, is this year, as last, far in the lead with 721 casualties, followed by New York with 566 and Illinois with 542. Two years ago Massachusetts led with 637, but last year dropped to eighth place with only 193, and returned this year to fourth place with 467. The 1,007 total increase over last year is fairly well distributed among the states.

All accidents were carefully omitted which were *not* received in the discharge or handling of fireworks or other means of noise production on or about the Fourth of July. For instance, some soldiers in the course of their regular duty were killed by the explosion of a cannon while firing the morning salute on the morning of the Fourth. As this might have happened at any time and was in line with their regular duty, it could not well be considered as due to fireworks for Fourth of July celebration.

Besides 87 deaths from tetanus, there were 95 from other accidents, making a total of 182 deaths. There were 4,994 non-fatal injuries, or over a thousand more than the total for last year, which was 3,986, or for 1903, which was 3,983. Therefore, the total of dead and injured was 5,176, as compared with 4,169 for last year, or 4,449 for 1903. Yet for all this enormous number of injuries we find some cities congratulating themselves on the small number of accidents this year! Some of these reports are rather pathetic. After the expression regarding the "comparatively few accidents this year" follows a long list of names of those having eyes put out, fingers or hands torn off, of one young man to save whose life it was necessary to amputate both legs, and of others having their faces lacerated or other disfigurements which the hapless celebrants will carry with them to the ends of their lives. And this was "better than former years!"

Of the 95 killed, aside from tetanus, through the use of fireworks, there were 37 persons killed by gunshot wounds, 13 of these being hit by stray bullets from the reckless use of loaded revolvers or rifles on the part of others; 23 persons, mostly young children, were burned to death by fire resulting from fireworks; 10 persons died from fright or shock as a result of the sudden loud noises near them. A baby was thrown into convulsions and died as the result of a large firecracker explosion near its ear; 7 were killed by a cannon, a number by the bursting of these from an overcharge of powder; 4 were killed by giant crackers, 4 by powder explosions, 3 by misdirected sky rockets, 2 by falls in efforts to get away from firecrackers, 2 in runaways due to firecrackers being thrown beneath the horses, 2 by dynamite and 1 by the explosion of a railroad torpedo.

Table 4.—Summary by States of July Fourth Casualties.

State.	Deaths.			Injuries.						Total Persons Dead or Injured.	Causes of Tetanus Cases.		Causes of All Cases Aside from Tetanus Cases.						
	From Tetanus.	From Other Causes.	Total.	Loss of Sight.	Loss of One Eye	Loss of Legs, Arms or Hands.	Loss of Fingers, One or More.	Other Injuries.	Total Non-fatal Injuries.		Blank Cartridge.	All Other Causes.	Blank Cartridge.	Fire Crackers.	Cannon.	Firearms.	Stray Bullet.	Canes and Caps.	Powder and Fireworks.
Alabama	1	....	1	....	....	....	....	....	....	1	1	....	....	....	....	....	....	....	....
Arizona	....	....	....	....	....	....	....	4	4	4	....	....	....	1	....	....	....	....	3
Arkansas	....	....	....	....	....	....	....	3	3	3	....	....	2	....	....	....	....	....	1
California	4	3	7	....	6	4	2	123	135	142	3	1	18	37	16	7	5	6	49
Colorado	....	1	1	....	1	2	1	21	25	26	....	1	....	13	2	....	1	....	9
Connecticut	1	4	5	....	1	....	4	122	127	132	1	2	39	32	15	6	....	3	34
Delaware	1	1	2	....	....	1	1	10	12	14	1	....	3	5	....	2	....	....	3
District of Columbia	....	....	....	....	....	....	1	23	24	24	....	....	1	9	1	4	....	....	9
Florida	....	....	....	....	....	....	....	2	2	2	....	....	1	....	1	....	....	....	....
Georgia	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Idaho	....	....	....	....	1	....	....	2	3	3	....	....	....	3	....	....	....	....	....
Illinois	19	16	35	2	11	9	27	458	507	542	10	10	94	198	64	32	22	18	94
Indian Territory	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Indiana	3	4	7	2	3	4	7	194	210	217	3	....	29	80	27	8	5	3	62
Iowa	3	6	9	2	10	3	33	271	319	328	2	1	23	172	37	8	4	16	65
Kansas	....	2	2	....	1	2	4	47	54	56	....	....	7	22	9	4	....	6	8
Kentucky	....	....	....	....	1	....	....	16	17	17	....	....	....	....	2	1	1	1	13
Louisiana	....	1	1	....	....	....	....	2	2	3	....	....	....	....	....	2	....	....	1
Maine	1	....	1	....	....	1	1	26	28	29	1	....	3	4	2	2	....	....	17
Maryland	1	....	1	....	....	....	1	11	12	13	1	....	....	6	....	....	....	....	6
Massachusetts	6	3	9	....	5	1	12	440	458	467	4	3	98	139	39	20	9	7	148
Michigan	6	3	9	....	9	5	21	244	279	288	7	2	42	107	33	11	1	21	64
Minnesota	2	1	3	....	5	2	4	160	171	174	....	2	25	84	10	5	1	6	41
Mississippi	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Missouri	3	2	5	1	8	3	10	191	213	218	2	1	71	45	15	9	6	4	65
Montana	1	1	2	....	....	....	2	36	38	40	....	1	....	14	1	....	....	1	23
Nebraska	3	1	4	....	2	....	1	36	39	43	3	....	12	14	3	1	1	2	7
Nevada	....	....	....	....	....	....	....	2	2	2	....	....	....	....	....	....	....	....	2
New Hampshire	....	....	....	1	....	....	1	7	9	9	....	....	....	6	1	....	....	....	2
New Jersey	1	....	1	4	5	10	15	315	349	350	3	....	73	110	31	22	9	7	95
New Mexico	....	....	....	....	....	1	1	3	5	5	....	....	....	2	....	1	....	....	2
New York	5	14	19	6	10	14	16	501	547	566	4	2	69	169	44	42	38	8	190
North Carolina	....	....	....	....	....	....	....	1	1	1	....	....	1	....	....	....	....	....	....
North Dakota	....	....	....	....	1	1	2	25	29	29	....	....	....	21	3	....	....	1	4
Ohio	3	9	12	1	5	1	18	292	317	329	3	2	47	111	39	14	10	17	86
Oklahoma	1	1	2	....	1	....	....	4	5	7	....	1	1	4	....	....	....	....	1
Oregon	....	....	....	....	....	....	2	7	9	9	....	....	....	7	....	....	....	....	2
Pennsylvania	11	15	26	8	9	11	16	656	695	721	7	5	54	222	46	38	25	19	305
Rhode Island	....	1	1	....	....	....	1	9	10	11	....	....	1	5	2	....	....	1	2
South Carolina	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
South Dakota	....	....	....	....	....	....	....	15	15	15	....	....	2	5	....	....	....	1	7
Tennessee	....	1	1	....	....	....	....	4	4	5	....	....	2	1	....	1	....	....	1
Texas	....	....	....	....	....	....	....	4	4	4	....	....	1	....	....	1	....	....	2
Utah	1	1	2	....	....	....	3	20	23	25	....	1	2	11	....	2	....	2	7
Vermont	....	....	....	....	1	1	....	8	10	10	....	....	1	5	1	....	....	2	1
Virginia	....	....	....	....	....	....	....	5	5	5	....	....	1	1	1	....	....	....	2
[illegible]								1	13	15	....	....	2	7	....	2	....	1	3
[illegible]								1	34	34	....	....	4	16	2	3	1	1	7
[illegible]								1	219	230	9	4	15	81	27	18	....	17	59
[illegible]								3	7	8	....	....	....	6	....	....	....	....	2
[illegible]								2	5094	5176	65	39	744	1775	474	265	139	171	1504
1904 totals	91	92	183	19	61	61	208	3637	3986	4169	74	25	931	1268	508	406	†	‡	1056
1903 totals	406	60	466	10	75	54	174	3670	3983	4449	363	29	1309	1152	397	236	†	‡	731

† Figures for accidents caused by stray bullets included with "gunshot" wounds in 1903 and 1904.
‡ Figures for accidents caused by canes and caps included with "powder and fireworks" in 1903 and 1904.

The non-fatal accidents were apparently more severe this year than last, 6 more were made totally blind, 45 more lost one eye, 19 more lost a leg, arm or hand, and 13 more lost one or more fingers. The most prolific source of severe accidents, causing blindness, loss of hand, arm or other lacerated wounds was the giant cracker. Almost invariably the injury resulted from the picking up of the cracker or retaining it in the hand on the supposition that "it had gone." From a number of sources comes the observation that, while the spark continued to burn the central pith, *the outer part of the fuse ceased to burn.* Thus the spark had disappeared, giving the impression that it had gone out until an explosion resulting in the tearing or loss of an eye, finger, hand or arm, gave ample proof to the contrary. This is further shown by the experience of one lad who picked up the cracker and put it under water to make sure the spark was out, but still it exploded, tearing his hand badly.

Following the giant cracker, the toy cannon still nearly holds its old place as a means of destruction. Stray bullets are entered in a column by themselves where heretofore they were entered in the column with "gunshot" wounds. This will show how many people are injured through the careless use of firearms on the part of others, and show in what states laws against firearms are less strictly enforced. As before stated, 13 people were killed outright through this recklessness, and 126 others more or less seriously injured.

Table 5.—Total Deaths and Accidents by States During Three Years.

	1903.	1904.	1905.
Alabama	2	7	1
Arizona	1	....	4
Arkansas	....	....	3
California	100	138	142
Colorado	39	44	26
Connecticut	162	133	132
Delaware	1	5	14
Dist. of Columbia	2	10	24
Florida	1	2	2
Georgia	....	....	....
Idaho	4	4	3
Illinois	366	423	542
Indian Territory	1	....	....
Indiana	160	211	217
Iowa	168	137	328
Kansas	63	88	56
Kentucky	30	72	17
Louisiana	....	2	3
Maine	31	32	29
Maryland	21	22	13
Massachusetts	637	193	467
Michigan	144	157	288
Minnesota	157	102	174
Mississippi	....	....	....
Missouri	147	84	218
Montana	5	17	40
Nebraska	46	63	43
New Hampshire	37	23	9
New Jersey	228	204	350
New Mexico	....	4	5
New York	522	549	566
Nevada	....	1	2
North Carolina	....	....	1
North Dakota	10	8	29
Ohio	443	327	329
Oklahoma	....	3	7
Oregon	16	13	9
Pennsylvania	533	744	721
Rhode Island	64	30	11
South Carolina	....	....	....
South Dakota	4	10	15
Tennessee	4	1	5
Texas	2	2	4
Utah	23	22	25
Vermont	45	14	10
Virginia	....	11	5
Washington	21	25	15
West Virginia	19	16	34
Wisconsin	190	215	230
Wyoming	1	2	8
Total	4,449	4,169	5,176

We have added a column for the canes and caps. Even these canes, which at first were heralded as a safe means of noise making, are not as harmless as at first supposed. The noise element is certainly a success, but the exploding cap often causes penetrating wounds of the ankles or legs—usually the most unprotected part of those who use them, the boys with knee pants. Then, overcharging the cane caused it to explode in many instances, the particles of iron doing considerable damage. One case of tetanus this year resulted from such an injury.

As to preventative measures, we learn from many sources that great pains were taken this year to be prepared *to give antitoxin in all injuries of a penetrating nature.* Health departments in some of our large cities distributed a supply of antitoxin to the various hospitals and dispensaries that it might be ready if needed. Local medical organizations met before the Fourth, discussed the treatment of tetanus, and passed resolutions in favor of legislation regulating or restricting the use of fireworks. Cities passed ordinances, some only against the toy pistol, others prohibiting the sale of firecrackers above a certain size. Others prohibited the use of fireworks on any other day than the Fourth, while one city, Baltimore, placed the ban on the use of fireworks of all descriptions. The results in Baltimore are certainly gratifying, there being only 6 accidents reported from that city, and these of a minor nature.

This year, however, many cities did not stop with the passing of ordinances; arrests for their violation were numerous, and therein is a hopeful sign. Only a few years ago an arrest for making a noise on the anniversary of the nation's independence would have been looked on as against the spirit of patriotism and declared an outrage. Nothing better shows the change in public sentiment than the fact that this year a great many arrests were made and by public approval. Undoubtedly the publication of the facts, showing the enormous cost in life and limb of this manner of celebrating the Fourth of July, has helped to bring about this change in sentiment. The vigorous action of medical organizations throughout the land has added impetus, and the press has taken the matter up to a remarkable degree and has made good use of our published data on the subject.

The work should go on, however, until properly enforced laws shall put an end to the annual slaughter and maiming of so many of our children and young people. It is certainly high time there was an end to it. *To place* a sharp-pointed knife or a bottle of poison in the hands of a babe would certainly be as sane an act as to place in the hands of children or others inexperienced in the dangers and handling of them, such destructive implements as blank cartridge pistols, cannon, powder and giant crackers have proved themselves to be.

We urge it on the members of the medical profession, and on the press of our country, to continue with us in this crusade for a safe and sane celebration of our nation's birthday. The work of the past few years has had its results. May the movement have accelerated speed!

Clinical Reports

SUBCUTANEOUS EMPHYSEMA IN A CASE OF BRONCHOPNEUMONIA.

FRED S. SPEARMAN, M.D., C.M.

WHITING, IOWA.

Instances in which this condition is as widespread over the body as in the following case are not of frequent occurrence; another interesting point in this case was the rapid initial development of the emphysema. Nothnagel regards subcutaneous emphysema as a very grave complication in bronchopneumonia.

Patient.—J. B., aged 16 months, with the exception of a slight cold last winter, had always been healthy.

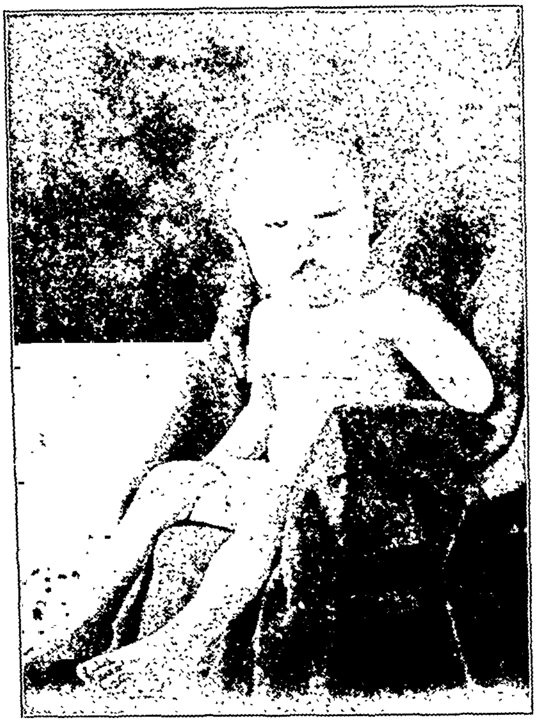
Family History—Both parents are living and in good health. An older brother and sister were recovering from the whooping cough. Father's mother died of phthisis.

Present Illness.—I first saw the patient on June 4. The parents informed me that she had been suffering from whooping cough for about five weeks, but a day or two before I was called she developed a high fever with vomiting, and the cough altered in character.

Examination.—This showed fine crepitant râles, general throughout both lungs, respirations about 70 to the minute, pulse 160, temperature 102.6 in the axilla. Cough was hard and tight, expiration grunting, and nervous symptoms marked, such as clutching at the bed clothes and restlessness. The face was of a dusky hue; in short, all the symptoms of a severe bronchopneumonia were present.

Course of the Disease.—For the next three days there was little change in the general condition. The râles, however, became more liquid as secretion developed. There was considerable meteorism, and the rectum would become partially prolapsed when the child coughed.

On the afternoon of June 8 a slight swelling appeared on the left side of the neck, low down. That same evening, during a severe coughing spell, the swelling suddenly increased in size and spread in a few moments' time up the side of the face and on to the left temple and upper eye lid, completely closing the eye. By the following morning the upper part of the chest before and behind was involved, and the day after the entire scalp and right side of the face so that the right eye was also closed. During the ensuing three days the tumefaction extended over the remaining portion of the chest, as far down posteriorly as the sacrum, and down both arms.



Over the portions where the swelling was most marked the skin was tense and shiny, the swelling was elastic and nonresistant to pressure, crackled under the finger and was tender. The crackling resembled the sound made by squeezing a rag saturated with soap suds. I diagnosed the condition as subcutaneous emphysema resulting from a ruptured bronchus.

Whether it was a mere coincidence or not, with the appearance of the emphysema the general condition greatly improved, the nervous symptoms disappeared so that the child rested easily, grunting expiration soon nearly ceased, expectoration became profuse and easy, and the face showed a much better color. Pulse and temperature were also lowered, the latter dropping by lysis until, by June 17, it had reached normal. It occurred to me that possibly the escape of the air into the tissues had a favorable effect by relieving intrapulmonary pressure. By June 27 the emphysema had entirely disappeared, being last noticed on top of the head, and when I last saw the little girl, July 4, she had apparently recovered her usual health.

Treatment.—This was along the lines commonly employed in bronchopneumonia. The emunctories were kept active by means of frequent sponging with tepid water, calomel and enemata for the bowels, and plenty of water to drink. Diet consisted of milk and light broths. The chest was kept protected by a cotton batting jacket. A saline mixture containing iodid and citrate of potash with aromatic spirits of ammonia was administered to promote bronchial secretion and keep it free. The child vomited very easily, the attacks of coughing frequently producing emesis, so that it was rarely necessary to employ emetic measures in order to get rid of mucus.

The photograph was taken after the emphysema had commenced to subside, but shows clearly the puffy appearance of the eyelids, and also in part the swelling over the upper chest in front and behind.

CARBOLIC ACID BURN.

EFFECTUAL, ALTHOUGH LATE, USE OF ALCOHOL.

T. J. SWISHER, M.D.

RAWLINS, WYO.

A young lady employed in a drug store started home from work in the evening, taking with her a number of small parcels to deliver to patrons of the store who lived in her neighborhood. Among these parcels was an ounce bottle filled with 95 per cent. carbolic acid. In some way the bottle was broken, pouring the contents over both hands. As it was dark, she did not at first know what the bottle had contained, and only after the hands began to burn did she take the trouble to wipe off the excess of acid with her handkerchief. After reaching home, she applied a dressing of vaselin and it was not until over an hour after the burn occurred that I saw her. At this time the white eschar covered the entire palmar surfaces of both hands as well as the palmar and interdigital surfaces of all the fingers. Sensation over this surface was entirely absent and the fingers could not be voluntarily flexed. The hands were at once cleansed of the vaselin and put into an alcohol bath, with constant rubbing. Aften ten minutes the color began to return, a tingling sensation developed and the fingers could be voluntarily flexed. The alcohol bath was continued for twenty minutes and all evidence of the burn had then disappeared except a slight tingling and stiffness of the fingers which persisted for several hours, but which almost entirely disappeared by the following day. Aside from a little cracking of the skin over the finger tips and an unpleasant dryness which persisted for a week, the recovery was complete and immediate.

To me the interesting feature of the case was the length of the interval between the receipt of the burn and the application of the alcohol.

Believing this to be a topic worthy of discussion, I would like to hear from others with special reference to the length of time that may elapse before alcohol loses its power as a local antidote for this acid.

Diazo Reaction in Tropical Diseases.—A. Austregesilo of Rio Janeiro has been studying this subject since 1900. He found the diazo reaction almost constantly present in bubonic plague. Certain drugs modify the reaction, and as the disease progresses to a fatal termination the reaction generally fails. Antiplague serum does not affect it. In yellow fever and in malaria the tests were invariably negative. In beri-beri the reaction was always negative, as well as in leprosy, in scurvy and ankylostomiasis. In typhoid fever and in tuberculosis his findings were the same as those reported by others elsewhere. In smallpox the reaction was always present. His report is published in the *Revista Med.-Cir. do Brazil*, xiii, No. 3.

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FOURTH OF JULY CASUALTIES.

In this issue appears an annual summary of the accidents due to the idiotic methods of celebrating our national anniversary. The list, which no one can claim to be absolutely complete, is yet sufficiently appalling. There must be hundreds of minor injuries and many of a more severe character occurring on Fourth of July that never receive any public notice, and even deaths directly or indirectly due to such accidents undoubtedly escape publication or are miscredited to other causes. If we could have the full total of what we owe of human life and human suffering to this cause fully revealed, the facts would be still more formidable.

Nevertheless, the figures this year are full of encouragement. While the total of non-fatal injuries is greater than those of two years preceding, the total of deaths is still on the decrease, especially as compared with the figures of 1903. The difference is still more striking when we consider only those caused by tetanus, the most terrible death-causing factor. The toy pistol which has been so important a factor in the tetanus mortality in past years seems to be in the process of legal suppression, and what has been done in this particular case is possible with other of the important causes, a fact which is a very encouraging indication for the future. We can credit also to the direct use of antitoxin as a prophylactic, especially in some of our larger cities like St. Louis, a certain proportion of the prevention of Fourth of July tetanus. The use of this antitoxin is likely to increase and we may be hopeful of still better results in the future. The giant cracker is also a less fruitful cause of lockjaw, a fact probably due in part to the laws against its use. While the total deaths from tetanus, as well as from all causes, is not so markedly less than that of 1904, though very strikingly so as compared with 1903, we do not believe that this indicates that we have reached the normal limit of the result of effort for its decrease. The only satisfactory outcome will be reached when Fourth of July accidents are abolished as a cause of death or serious injury.

When we take the total of all injuries into account, the figures are, at first sight, less encouraging, as they exceed those of both of the previous years. This may be due, in part, to better reporting of minor injuries, owing to the interest that has been aroused of late years in the subject, and we think this is likely to be the fact. If so, it is an encouraging symptom rather than otherwise. One thing is certain, it is our duty as a profession to keep up the agitation. The public is not yet half educated as to the importance of the matter. If it were, our municipal and other authorities would be less tardy in their promulgation of proper regulations and less lax in their enforcement—two causes which are responsible for a large part, if not nearly all, of the evil as it exists. If we do our full duty, the time will come, and we believe is not so far distant, when the records of our national holiday will not be like those of a little war.

THE FUSO-SPIRILLAR SYMBIOSIS.

Recent medical literature contains numerous reports of the presence of fusiform bacilli commonly associated with long spirilla on various inflammatory and necrotic processes. In 1893, Rauchfus observed this symbiosis in ulceromembranous angina. In 1896, Vincent, who has made many reports of these organisms, described their presence in hospital gangrene and also in a form of ulcerative angina, since then often spoken of as Vincent's angina. Bernheim noted the presence of the same bacteria in stomatitis. Since then numerous corroborative observations have appeared from various parts of the world, thus indicating that these organisms are distributed widely. Indeed, the fusiform bacillus appears to be a normal inhabitant of the buccal cavity, and it is assumed by Vincent and others that it assumes a pathogenic rôle under special conditions only, more particularly lowered general vitality from all causes and other microbic lesions. Spirilla have been found in healthy mouths also and on normal tonsils, and they are regarded by many as the same organism as Miller's *Spirochæta denticola*. The first list of the different lesions in which these organisms have been demonstrated is constantly growing. Sometimes the fusiform bacillus only is present, but equally as often, if not oftener, both the microbes are present; hence, the term fuso-spirillar symbiosis, which is used by Vincent in a recent article on the subject.[1]

In addition to angina and stomatitis, frequently of an ulcero-membranous character, and noma, the organisms under consideration have been found in fetid oral abscesses, in hospital gangrene, in appendicitis (Vincent observed them in 11 of 19 cases), in gangrenous ulcers of the penis, bronchiectasis, periostitis and fetid abscess of the leg, and in cerebral abscess. It is important to bear in mind that other organisms, especially pyogenic cocci, are always present also. Although the interrelations of these various bacterial forms have not been worked out as yet, many of the lesions mentioned, particularly those associated with necrosis, have such manifest peculiarities that it does not seem likely that the fuso-spirillar symbiosis is wholly devoid of pathogenic significance. Thus, in the microscopic sections of the tissues involved, filamentous organisms are found at the line of advancing necrosis in large numbers. Experimentally the infection of materials from ulceromembranous angina, etc., is followed by localized gangrene and abscesses, but here it is manifestly impossible to determine the exact part played by the various bacteria present. This question can be settled only by continued work with pure cultures. Ellermann, as well as Weaver and Tunnicliff,[2] have obtained small abscesses with pure cultures of the bacillus. So far, it has not been possible to isolate the spirillum in pure cultures, although Weaver and Tunnicliff obtained evidences of the proliferation in mixed cultures with the fusiform bacillus and other bacteria. The fusiform bacillus, however, can be isolated in pure culture. Veillon and Zuber, in 1898, were the first to grow a fusiform bacillus which they found in a case of appendicitis. In 1904, Ellermann grew it from ulceromenbranous angina and gangrenous stomatitis, and more recently Weaver and Tunnicliff obtained pure cultures from angina, stomatitis and diphtheria. The bacillus in all cases was an obligate anaërobe that grew at the body temperature only. Further study may show that what is here spoken of as a "fusiform bacillus" in reality represents several varieties, although the descriptions of Ellermann and of Weaver and Tunnicliff appear to tally quite closely.

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[1] Ann. de Dermat., 1905, vi, 5. Abstracted in The Journal, July 29, 1905, p. 359.

It is important that the lesions, especially of the mouth and throat, in which the fuso-spirillar symbiosis occurs, should be recognized and studied carefully by clinicians in order that, if possible, a more perfect differentiation may be secured and clinical relations of the processes better understood. In order to recognize the lesions definitely, it is necessary to study carefully cover-slip preparations and to make anaërobic cultures. The usual method followed in the bacteriologic examination of the throat in suspected diphtheria does not suffice, and cases of membranous angina in which the diphtheria bacillus is absent merit particular attention. Deposits about the necks of the teeth, often associated with bleeding gums, in children, especially in institutions, also require special attention. On the whole, it is clear that the time is now at hand when progress in the knowledge of many lesions of the mouth and throat and of fetid and gangrenous processes elsewhere requires the use of anaërobic cultural methods, as well as the aërobic hitherto so largely employed alone.

THE ULTRAMICROSCOPIC, FILTERABLE VIRUS OF HOG CHOLERA.

Hog cholera is a very destructive disease and consequently of great economic importance. It is proving to be an important disease from the purely scientific point, as well because of recent significant discoveries in regard to its etiology. It is on this latter account that a gist of certain recent investigations, particularly by the Bureau of Animal Industry at Washington,[1] under the direction of D. E. Salmon, is presented.

When the hog cholera bacillus (*B. choleræ suis*) was discovered, twenty years ago, it was believed that the etiology of this disease was solved. Facts were continually encountered, however, that did not harmonize with the generally accepted view that the disease is caused by the bacillus. A form of acute hog cholera in southwestern Iowa, in particular, presented high contagiousness, the blood of infected animals being virulent on subcutaneous injection into healthy, non-immune animals, and on recovery a definite immunity—facts that are not observed in experimental infections with the hog cholera bacillus which, it must be borne in mind, is pathogenic to hogs and other animals on experimental inoculation, as well as very frequently present in animals sick with spontaneous hog cholera. De Schweinitz and Dorset found that the actual cause of this form of hog cholera passed through the finest porcelain filters, and that it consequently belongs in the class of so-called filterable or ultramicroscopic viruses, the number of which appears to be increasing slowly. These observations have been confirmed and enlarged by Boxmeyer[2] of Detroit and by Dorset, Bolton, and McBryde.[1] The latter investigators ascribe the new departure of the study of hog cholera to the skepticism felt by the late De Schwenitz as to its generally accepted bacillary origin.

The mysterious virus thus demonstrated is known as yet only by the effects it causes on injection into susceptible hogs, because all efforts have failed to reveal by staining or culture any visible microbe in the virulent filtrates. This virus is not a toxin, because the disease caused by filtered blood serum is transmissible through succeeding animals, a fact that shows that the causative agent possesses the power to multiply. In this respect the filterable virus of hog cholera resembles the virus of foot-and-mouth disease, as well as other diseases of this peculiar group, the only representative of which that occurs in the human being, so far as is now known, being yellow fever.

While the filterable virus must be regarded as the prime cause of the disease studied, the part played by the hog cholera bacillus can not be neglected. In the first place the Washington investigators are not willing to deny that the bacillus, under certain circumstances, may cause an independent disease; on the other hand, however, it seems quite certain that the filterable virus so reduces the natural resistance of the hog that the hog cholera bacillus is able to invade the infected animals and thus probably materially influence the result. Whether the bacillus is a normal inhabitant of hogs is not established definitely, but certain facts point in that direction. The actual demonstration that such is the case would materially encourage the view that the bacillus is a secondary invader. On account of the great probability that the relations between the ultramicroscopic virus of hog cholera and the bacillus of hog cholera are those of primary and secondary infecting agents, there is furnished an interesting analogy of what undoubtedly is the case in certain human diseases, especially severe forms of scarlet fever and smallpox, namely, that the primary cause, the actual contagious element, in the case of smallpox especially being capable of wide aerial dissemination, so lowers the general resistance that the otherwise harmless streptococci in the throat are able to invade the tissues and lead to the general streptococcus infection so commonly the case in fatal forms of these diseases. It may be permitted, too, to indulge in the speculation that similar complex conditions as in hog cholera may exist in other human diseases, such as whooping cough, for example, as well perhaps as in others, the etiology of which is now regarded as established.

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[2] Journal of Infectious Diseases, 1904, ii, 446. The literature is given fully in this article.

[1] De Schweinitz and Dorset: Bureau of Animal Industry, Circular 41, 1903. Dorset, Bolton, McBryde: Bureau of Animal Industry, 1905, Bulletin 72.

[2] Jour. of Infect. Dis., 1905, ii, p. 359.

The demonstration that filterable virus is the essential cause of outbreaks of so-called hog cholera naturally leads at once to new attempts at more effective therapy than heretofore available. Experiments with promising results have been made already by Boxmeyer and McClintock,[3] and the outlook seems favorable for ultimate success.

REMOVAL OF OVARIES FOR CARCINOMA OF THE BREAST.

The relations which exist between the breasts and the internal sexual organs, the uterus and ovaries, while apparent to every observant practitioner, so far as their *modus operandi* is concerned, are as obscure as ever. Aside from the gross changes in the breasts incident to childbearing, more subtle ones are present in many women at each menstrual period. The idea that such a physiologic condition might have a bearing on pathologic processes, and particularly on new growths in the breast, was first, we believe, suggested by the English surgeon, Beatson. Reasoning from analogy that if an ovarian injury in a cow would cause suppression of the milk, ovariotomy in a woman might also affect the mammary glands, he suggested castration in inoperable cases of mammary carcinoma. While the logic of Beatson's reasoning may not appeal to every one, his belief led him to carry into effect the natural deduction to be drawn from it, viz., removal of the ovaries in cases of hopeless mammary carcinoma. Some of the results obtained by Beatson and other surgeons in Great Britain have certainly been striking. While absolute cures have rarely been effected, the operation seems to have produced striking amelioration in a considerable number of cases.

Michels has called attention to the fact[1] that this work has been almost overlooked outside of the British Isles. He cites some remarkable cases to show the marked palliative effect which the operation may have. In at least two cases, quite large areas of carcinomatous infiltration of the breast or chest wall disappeared and had not returned in one case five and in the other eight years after the ovariotomy. Results like these were, however, exceptional, in most instances there was both local and general improvement, but in the long run the growth returned. The local improvement usually took the form of a decrease in pain, and accompanying this in a fair percentage of the cases a reduction in size of the tumor took place. In some instances, ulcerated areas took on a healthy appearance and completely healed up.

There is some dispute as to the indications for this operation. Many British surgeons advise operating even after the menopause, or at least for a year or two after it. Michels is opposed to this, and thinks that this operation should be restricted to women between 40 and 47 years of age. In young women, he thinks the operation is advisable on account of the well-known virulence of carcinoma in them; after the menopause the operation is uncalled for, as Nature has practically done the same thing in a different way. If possible, it is advisable to remove the recurrence of the carcinoma at the same time that the ovariotomy is done.

It is fair to speculate on the way in which the removal of the ovaries influences mammary new growths, and several interesting points arise. If the effect is due to the suppression of an internal ovarian secretion which was stimulating the mammary neoplasm, we must assume that the tumor cells had inherited in a marked degree the possibility of being stimulated, notwithstanding the fact that they are far from being normal breast cells. One would naturally, we think, tend to compare the process described with the shrinkage of myomata, which often follows the menopause. It is well to bear in mind that, at the change of life, the breasts, as well as the other sexual organs, undergo atrophic changes. May it not be that the oöphorectomy simply brings on an artificial menopause and leads in this way to atrophy of the tumor? Here, again, we would have to assume that the tumor cells had inherited the characteristics of their parents, the normal breast cells. There is really nothing very far fetched in this assumption, however, for we know of tumor cells which are able to secrete substances like normal cells. Certain adenomata of the liver, for example, secrete bile. Like everything connected with the question of internal secretions, the subject is a fascinating one, but, like many subjects of a pathologic nature, it brings into the glare of the limelight our weaknesses in physiology. There are still many things to be learned regarding the connection between the breasts and the internal sexual organs.

THE RELATIONSHIP BETWEEN GENERAL PARALYSIS AND TABES DORSALIS.

The similarity which exists between general paralysis of the insane and tabes dorsalis has been noted and commented on since shortly after Westphal accurately described the latter disease. The concurrence of the two diseases is relatively so common, the relation of both conditions to syphilis is so frequent, and the pathology of the two diseases so similar that one is tempted to assume that they represent different phases of the same fundamental condition. It is the French school of physicians who have most ardently supported the view that unity between the two diseases exists, though some German observers, notably Schaffer, strongly support them. There are certainly many points in favor of such a view. According to Nageotte, two-thirds of the cases of general paralysis are accompanied by tabes; an individual may start with the latter disease, then mental symptoms may set in and the picture change to that of general paralysis; the brains of tabetics may show the anatomic changes of general paralysis; tabes may be masked by general paralysis. All these facts emphasize the intimate relationship which exists between the two diseases, and while many hold that the two conditions are separate, those who have had an opportunity to study both neurologic and psychiatric cases seem inclined to favor such a unity.

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[3] Jour. of Infect. Dis., 1905, p. 368.

[1] Münch. med. Wochft., vol. lii, No. 24, Ab. in Journal, p. 663.

The question has been restudied recently by Cotton, who has had the advantage of being able to select from a large number of patients some twelve of which could be carefully followed from the beginning to the end of their sickness. The cases which were studied were those which would be classed by some authors as taboparalysis. This term includes any case which presents symptoms of a combination of the two diseases, and, of course, includes three possible groups of cases, i. e., those in which the tabes preceded the paralysis, those in which the opposite condition occurred, and those in which the two diseases progressed side by side. All varieties of cases were studied by Cotton and most careful records were kept of the disturbances in sensation, the pupillary reaction, the various crises, bladder and rectal symptoms, and the condition of the deep reflexes. The result of the investigations lead Cotton to believe that the two diseases present many analogies in their etiology, symptomatology, and course, and that they occur so frequently together that it must be more than a mere coincidence. The clinical symptoms of the two diseases when combined is the same as when they exist apart, though there are differences in degree which depend on the predominant anatomic localization of the pathologic process. The absolute identity of the two diseases can not, of course, be settled until more is known of their pathogenesis.

This study of Cotton[1] does more than to draw attention to the similarity between two very common diseases. Reading between the lines, one gathers the impression that much of the disagreement which has existed and which still exists on this and kindred subjects is due, partly at least, to the separation of neurology from psychiatry. This, no doubt, produces experts in both of these subjects, but it narrows their field of vision. The subjects are so closely allied, and run so insensibly the one into the other that they should never have been divorced, and only were divorced by necessity. The stigma attaching to the insane has now been largely removed, and we hope that in the near future there will be in America, as there are now in Europe, more psychiatric clinics in which acute cases of insanity, especially, are seen and studied by the same man who sees and studies neurologic cases.

THE COUNTY SOCIETY AND THE ORGANIZATION MOVEMENT.

Since the reorganization plan was adopted in 1901—only four years ago—remarkable progress has been made in unifying the medical profession in the United States. The influence of the new spirit permeating the profession is being felt not only in the reorganized states, but even in the two or three states which have not adopted the new plan. Any one who will compare the conditions of to-day, in any part of the country, with conditions of five years ago will realize that a remarkable change for the better has taken place. "Unity, peace and concord," as Osler put it, as well as a spirit of scientific progress, are distinguishing features of the new era.

The recognition of the importance of the county society as a unit is the basic principle on which the work of organization has been and is being conducted. The most important unit in the scheme of organization is the county society; then come the state association, and the American Medical Association. The last is the least important of the three; the first—the county society—the most important. Every effort that has been made by the American Medical Association in developing organization has been made with the above principle in view—the importance of the county or local society.

Now the machinery all over the country is practically complete, and results must be looked for. These are many, but the most important is that of making the county society something more than a name—something more than a piece of machinery lying idle, rusting: it must be made a living force to dignify medicine as a profession, to increase public respect for, and to elevate the material, moral and intellectual status of, that profession. How can this be accomplished; how can the county society be made a power for good to those who belong to it, and to the community? In many and various ways. The first thing to be recognized, however, is that the average county society, if left to itself, will become dormant. There are many exceptions, but this is the rule. Another thing must also be appreciated: if a society can be made a living, active force for good in one community, a similar society can be kept up in another community where similar conditions exist.

It was the recognition of these facts which prompted the House of Delegates and the Board of Trustees to ask Dr. McCormack to continue his work for another year. As Chairman of the Committee on Organization, he has been devoting a large part of his time in the recent past to organization work, although no small part of his efforts was exerted in aiding the adoption of the uniform plan by the various constituent associations. Hereafter practically all of his efforts will be in the line of building up county societies. His experience has taught him what can be accomplished and how. He has seen the society in one county doing magnificent work, while in the same state, with exactly the same conditions, the society in another county was practically dead; and he has seen why, has shown the members of the dormant society why, with the result that it too has become a living force.

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[1] Am. Jour. of Insanity, LXI, No. 4.

In other words, as he has gone from county to county and from state to state, he has acquired an experience with the methods and conditions that can, with great benefit, be imparted to physicians of other communities. Methods of regulating and upholding fees, and of securing the indispensable post-graduate work in scientific medicine, are thus compared and classified and made available for use everywhere. He has learned from observation and from experience what has been done in some communities in stimulating the organization of the profession; what methods have been adopted for dealing with quackery and with the nostrum evil; what has been done to bring about better relations between the physician and the pharmacist, and, in fine, what has proved to be the most effective methods of dealing with all the business and scientific sides of medicine. Thus Dr. McCormack is working, not as the agent of The Journal, not to build up the American Medical Association, but to benefit the medical profession of the United States, individually and collectively.

But if the whole country is to be covered, individual counties can not be visited, and should not be except for special reasons. The societies of a councilor district should unite in a district meeting so that mutual benefit may accrue to many and not to one society alone. The councilor should take the initiative, but the officers of a county society who desire Dr. McCormack to come into their community should write to their councilor to invite him. It must be remembered that he will not go into any state or into any district of a state unless the profession of that state or district desires that he should do so. All expenses connected with this work are met by the American Medical Association.

A MISERABLE OUTRAGE.

The depths of venality to which the nostrum makers descend in order to gather in a few more dollars are beyond the belief of those possessing normal human sympathy. One of the worst recent instances of this sort of inhumanity is now to be found in some newspapers of the Southern states. Inserted as news, not as an advertisement (*vide*, for example, the Shreveport, La., *Times* of August 16, 1905) appears what is called "an interview with Dr. Hartman concerning the yellow plague." Dr. Hartman needs no introduction, being widely known to physicians as that citizen of Columbus, Ohio, who has amassed a colossal fortune by selling to a gullible public as a "medicine," under the name of peruna, low-grade whisky flavored with cheap bitters. Aided by two or three avaricious renegade physicians, he has enmeshed in his fraud thousands of clergymen, lawyers, politicians, etc., and, if what is reported is true, has undoubtedly created an appetite for intoxicants in unsuspecting men and women and in innocent children. In the present instance, the fraud on humanity is at least equal in perfidy to that of the traitor who sells out his country. A summary of this interview is being spread broadcast over a portion of the United States for the benefit of yellow fever sufferers. "In all such cases it is advisable for the person to take peruna." "Begin taking peruna at once in teaspoonful doses so as to harden and heal the mucous membrane against the possible invasion of the yellow fever poison." (!) "Peruna should be used during the whole course of the epidemic." "I feel sure that any person following this advice is in no danger of taking yellow fever." What could be worse? Shall such things be permitted to continue? Can nothing be done to protect a fear-stricken people from such damnable outrages on humanity? And what about newspapers that will join in a conspiracy of this kind to defraud their readers for a few paltry dollars?

YELLOW FEVER.

In New Orleans the epidemic is held in check, the rate of increase not rising, while for the week there is a slight falling off in the number of new cases. Unfortunately, the pest spreads outside the city, and in some places the situation is grave. As the disease spreads it is demonstrating the failure of the shotgun quarantines. With dramatic unconcern the disease has penetrated some of the quarantines that have been reported to be "airtight." In our last week's issue we were glad to publish a letter from a correspondent at Natchez, Miss., who maintained that our strictures against the barbarity and futility of the shotgun quarantine were unwarranted. Writing under date of August 15, our correspondent said: "We know that non-intercourse with infected areas will prevent the introduction of the disease into healthy towns, and propose to follow up the plan that has proved safe in other times. . . . But this city is certainly closed to the world for the present." Yet, twelve days later, Natchez admitted to the world that it had nine cases of genuine yellow fever, and three additional suspicious cases. Nothing could more clearly illustrate the great weakness of the non-intercourse quarantine, leaving out of account its brutality of administration in so many places. It lulls the people into a false sense of security, so that the really necessary prophylactic measures either are not taken at all or are executed in a half-hearted way that renders them worse than useless. With all its rigors and entailed human suffering, the shotgun quarantine always fails of its object to arrest every incomer. There is ever a loophole—a careless or avaricious or potatious guard, or a byway that escapes watch. The traveler of the better class, going openly, can not miss detention or deportation, but the criminal and the tramp, and at times the local celebrity of powerful connections, can always find an open door. Town after town in the infected area is demonstrating these truths. It is to be hoped that these widely-known and manifold failures of the rigid quarantine as the sole means of defense against an epidemic will bring about the next most useful lesson to be taught by the present calamity. The money and energy spent on irrational quarantines, with the necessary contribution of still larger sums, if devoted to general and permanent sanitation, the destruction of mosquitoes, the oiling and draining of swamps, marshes and ponds, the close screening of houses, cisterns and beds, and the proper, humane, screened isolation of every suspicious case of illness, would accomplish the good that is desired; and there are no other known means of arriving at this end. It is impossible to believe that the present lessons will be forgotten in the future.

SLEEP-DRUNKENNESS.

Consciousness or the waking state is the condition in which active communication with the external world exists through the intermediation of the senses. It may undergo various modifications, some of a normal character, as in sleep, others of a morbid character, such as coma. During sleep, there is reason to believe, certain subconscious processes, partly of perception, partly of ideation, continue, and of which there is at times recollection and at other times none. This statement is exemplified in connection with dreams. In the derangements of consciousness symptomatic of morbid states, such as that which occurs, for example, in the course of epilepsy or of uremia, there is, as a rule, no memory of events that have transpired during this time. The dividing line between the normal and the abnormal, however, is at times so tenuous and the question of recollection or not is involved in so much uncertainty that this factor can not be considered as a means of differentiation. Under the term sleep-drunkenness or somnolentia has been described a condition in which during apparent sleep individuals perform purposive acts, at times, of a most complex and hazardous character and of which, subsequently, they have a clear and distinct recollection. A striking instance of this disorder has recently been placed on record by Dr. E. W. Taylor.[1] An otherwise healthy man, aged 31, who for years had occasionally walked in his sleep, related that he was compelled by an irresistible impulse to leave his bed, remove a screen from a window and slide down a copper water spout to the ground, scraping his hands and feet in the act. On reaching the bottom he realized what had taken place and quietly returned to bed. He maintained that he had not lost consciousness and that he had a distinct recollection of everything that had transpired. On another occasion, in his nightshirt, he entered, through a window, the bedroom of another man. At still another time, he vaulted from a third-story window, being awakened while hanging from the sill. He had had many other experiences of a similar character. Awaking was unattended with vertigo or confusion. According to the patient's explanation, his actions were impelled by an overmastering fear from a frightful dream. He had never seriously injured anyone, but he stated that if he were forcibly prevented from making his escape from the threatened danger he would stop short of no degree of violence to attain the desired end. The condition in question has thus clearly important medicolegal bearings, as the matter of responsibility might readily be brought into question. The term somnolentia, as applied to the disorder, appears wholly inadequate, while sleep-drunkenness seems lacking in accuracy as a descriptive term. Dana considered the condition a kind of active nightmare, but it seems to be an active form of somnambulism.

VACCINATION DURING ERUPTIVE STAGE OF SMALLPOX.

In a recent issue of the *Lancet*,[1] Dr. J. Cooke Hibbert claims that vaccination or re-vaccination may be successfully performed during the eruptive stage of smallpox, and cites eleven cases in support of his contention, the vaccination in these cases having been performed on the first, third and thirteenth day. This is by no means an uncommon occurrence, as has been demonstrated frequently at the Chicago Isolation Hospital. Patients vaccinated on the second and third day of the eruption, or up to the eighth day, will, as a rule, have a typical take, but not after this time. In a paper by Dr. Heman Spalding,[2] published in The Journal several years ago, reference is made to an experimental vaccination of over one hundred smallpox patients after the eighth day of the eruption. In none of these cases was there a take. The case reported by Hibbert in which vaccination was successful on the thirteenth day is probably one of a spurious type, although it might have been a perfect vaccination. These findings only prove that the tissues are not impregnated with the immunizing substances of smallpox. The fact that vaccination or re-vaccination was successful in a case having a rash of doubtful character is not an argument against that case being one of smallpox, but in such a case a positive diagnosis will have been made before there is any evidence of the outcome of the attempt at vaccination. Hence, vaccination for diagnostic purposes during the eruptive stage of any exanthem is of no value whatever.

Medical News

CONNECTICUT.

Cedar Mountain Hospital.—The free bed fund for Cedar Mountain Hospital for Deserving Consumptives now amounts to more than $5,300.

Norman Kerr Lecture.—Dr. T. D. Crothers, Hartford, has accepted an invitation to deliver the first oration in the Norman Kerr memorial lectureship at London, Eng., October 10.

Personal.—Dr. Wyeth E. Ray, Hartford, has been appointed associate medical director of the Travelers' Insurance Company.——Dr. Elias B. Heady, Milford, was seriously injured August 12 in jumping from an unmanageable automobile.

Nominal Damages.—In the damage suit of Lorin A. Barnes, Torrington, against Dr. William H. Carmalt, New Haven, in which $25,000 damages was claimed for the alleged sewing up of a piece of gauze in the abdomen, in an operation, the Superior Court awarded the plaintiff nominal damages.

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[1] Boston Med. and Surg. Jour., April 6, 1905, p. 398.

[1] Lancet, London, May 20, 1905.

[2] The Journal A. M. A., Oct. 11, 1902, p. 906.

July Deaths.—During July 1,648 deaths were reported in the state, equivalent to an annual mortality of 20 per 1,000. Of this mortality 37.3 per cent. occurred in children under 5 years. The chief death causes were: Diarrhea, 466; nervous diseases, 159; accidents and violence, 135; consumption, 110; heart disease, 109, and pneumonia, 44. Infectious diseases caused 189 deaths, or 11.3 per cent. of the total mortality.

ILLINOIS.

Typhoid Epidemic.—Typhoid fever is said to be prevalent in and around Greenville.

Unlicensed Practitioner Departs.—David Johnson, Waukegan, who claimed to have "an interstate and international license," and was fined $100 and costs in March for practicing without a license, learning that a warrant had been issued for his arrest, fled from the city.

Chicago Deaths.—During the week ended August 26, 561 deaths were reported, equivalent to an annual mortality of 14.68 per 1,000. Of these 179 were under one year old and 230 under 5 years of age. Acute intestinal diseases caused 152 deaths; consumption, 49; violence, 34; pneumonia and heart disease, each 33; nervous diseases, 27; nephritis, 26, and cancer, 24. Typhoid fever caused 12 deaths.

Personal.—At the annual meeting of the medical staff of the City Hospital, Moline, Dr. Albert M. Beal was elected president; Dr. Albert R. Beal, vice-president, and Dr. August H. Arp, secretary.——Dr. Annie B. McCallum Alguire, Belvidere, was thrown from a buggy August 20, breaking a rib and sustaining other serious injuries.——Dr. Richard E. Shurtz, Champaign, who has been seriously ill with septicemia in Denver, is recovering.——Dr. Joseph T. White, Freeport, was operated on for appendicitis at the Wesley Hospital, Chicago, August 16, and returned home three days later.——Dr. James E. Stubbs, Chicago, who has been seriously ill with septicemia at Colorado Springs, has returned to Chicago and is improving.

MARYLAND.

Personal.—Dr. J. T. Payne has removed from Corbet to Sunnybrook, Baltimore County.——Dr. Howard Bratton of Elkton was recently thrown from his buggy and dragged some distance, being badly injured.

Open-Air Sanitarium in Blue Ridge Mountains.—Through the efforts of the Quarter Club, Baltimore, an open-air sanitarium for consumptives has been set in operation at Mount Airy, among the foothills of the Blue Ridge Mountains. It was opened July 28 and has now seven patients. It is on a high hill near the Baltimore & Ohio Railroad, and consists of a seven-room cottage, with ample porches, and six open-air shacks on the edge of a forest. The current expenses are borne by the Hospital for Consumptives of Maryland. It is to be open winter and summer, and only the most hopeful cases are to be admitted. Thus has begun unostentatiously a work which doubtless will become one of the most useful and important charities in Maryland.

Baltimore.

Removals.—Dr. H. Walker Hutchins has gone to North Liberty, Ind., to practice.——The State Board of Health has removed its offices to its old quarters in the burnt district.

Visitor from Australia.—Dr. M. U. O'Sullivan, F.R.C.S.I., senior surgeon in St. Vincent's and the Woman's hospitals, Melbourne, Australia, visited the Baltimore hospitals last week.

Typhoid Not Unusually Prevalent.—The mayor makes the statement that typhoid fever is not more prevalent here than usual at this season of the year, and that the 140 cases said to exist represent all the cases in institutions since July 1. Many of these are now well and on the street.

College Denies Indebtedness.—The answer of the Woman's Medical College to the bill filed on July 25 for the appointment of a receiver, denies that the institution is insolvent, says that the allegations of the petitioners are "recklessly and wantonly made and untrue," and avers that it has never been customary for the college to pay its lecturers for their services, and denies that it is indebted to them for such.

MINNESOTA.

Founds Hospital.—The executor of the estate of the late Mrs. Mary Elliott has conveyed from the estate property valued at $175,000 in trust for the founding of a University of Minnesota Hospital at Minneapolis, as a memorial to the late Dr. Adolphus F. Elliott.

Personal.—Dr. Jehiel W. Chamberlin, St. Paul, who sailed from Montreal for Europe July 6, sailed for home September 1.——Dr. George E. Benson, Minneapolis, has returned from Europe.——Dr. E. H. Beckman, medical inspector and assistant bacteriologist of the State Board of Health, has been elected city physician of Minneapolis.——Dr. David H. Lando, St. Paul, has been given honorable mention for a thesis submitted at Vienna.——Dr. Frederic J. Plondke, St. Paul, is studying in Europe.

Murray County Medical Club.—Physicians of Murray County met at Slayton August 1, and organized a club to promote good-fellowship among the profession of Murray County and adjacent counties. The following officers were elected: President, Dr. Emil King, Fulda; vice-president, Dr. Walter E. Richardson, Slayton; secretary and treasurer, Dr. Leon A. Williams, Slayton; and censors and committee on medical ethics, Drs. Milton A. Trow, Avoca; George G. Balcom, Lake Wilson, and C. C. Walker, Currie.

NEW JERSEY.

Health Officers Elected.—Dr. Samuel D. Mayhew was elected health physician of Bridgeton August 24.——Dr. Duncan W. Blake was elected medical inspector of Gloucester City August 21.

Physicians Refuse Lodge Work.—All the physicians of Trenton have banded together in an effort to overcome lodge practice, and have signed an agreement not to accept contract lodge work in any form.

Milk Dealers Arrested.—Warrants have been served on two dealers at Egg Harbor to appear for adulterating food, as a result of the inspection by the State Board of Health a few weeks ago. Both men denied the charge, but will appear for trial before the Circuit Court.

Suicides Increase.—The annual report of the State Board of Health shows a material increase in the number of suicides during 1904. During the year there were 314, as compared with 265 for the previous year. The 1903 showing is at the rate of 15.70 per 100,000. Of the suicides 9 were residents of Trenton, 4 of whom took poison, 2 used firearms, 1 a knife and 1 threw himself from a height. Poison caused 153 suicides and 112 died by asphyxiation. The age most frequently selected was between 35 and 45 years. Of the number recorded 112 were born in America, 64 in Germany and 24 in Ireland.

NEW YORK.

Less Typhoid.—There is less typhoid fever in Buffalo than there was at the same time last year, but many cases of pertussis still exist.

Buffalo Personals.—Dr. Roswell Park, who with Dr. Edward McGuire, is making a short tour of Great Britain, later will attend the International Surgical Association at Brussels.——Drs. Matthew S. Mann and Herbert W. Williams are on a fishing trip in Canada.

Moving Day for Insane.—Fifty insane women, who are charity patients at Long Island State Hospital, were taken on August 22 to the Willard Parker State Hospital at Ovid, N. Y. They are the first of 400 charity patients housed in the building now to be turned into the King's County Hospital to be transferred. The others will soon be sent to the Rochester and Willard institutions.

Eddyite Cases.—The health department refused to issue a burial permit in the case of Thomas A. Chilcott, who died without medical attendance, but who was treated by Eddyites. On investigation it was shown that his case was hopeless, because he died from diabetes and diabetic gangrene. At the request of the Erie County Medical Society the district attorney is investigating the death of Mason Griffin, 2 years old, who was treated by Eddyite healers. It is charged that an irregular death certificate, signed by a doctor who had not been in attendance, was granted, and that the boy died as the result of pertussis, a contagious disease which should be reported to the health department. By order of the district attorney the body is to be exhumed and the medical examiners will hold an examination.

New York City.

Personal.—Drs. William T. Bull, William B. Coley and Walter F. Chappell returned from Europe on the *Kronprinz Wilhelm*, August 23.

Detained at Hoffman Island.—Nine cabin passengers and six of the crew of the steamship *Finance*, from Colon, have been held for further observation on account of high temperatures.

The Brooklyn Theaters Closed.—There has been some complaint that the health board has acted in a high-handed manner in closing the Brooklyn theaters and condemning them as insanitary and dangerous. A statement has been given out at the headquarters of the Health Department that owners have been twice notified since April that they would have to comply with the law and that the complaints are unjustifiable.

Contagious Diseases.—There were reported to the sanitary bureau for the week ended August 19, 464 cases of tuberculosis, with 115 deaths; 252 cases of typhoid fever, with 25 deaths; 119 cases of measles, with 5 deaths; 117 cases of diphtheria, with 19 deaths; 41 cases of scarlet fever, with 3 deaths; 16 cases of cerebrospinal meningitis, with 16 deaths, and 14 cases of varicella.

Typhoid Fever on the Decline.—The figures presented day by day show a steady decline in the number of typhoid fever cases. Only 22 new cases were reported in Brooklyn from August 19 to August 23. In the same time there were 13 new cases reported in Manhattan and none in the other boroughs. Last year the climax was reached in the week ending August 27, when 82 cases were reported. The number of cases for the corresponding week this year was 252.

Richmond Waterless.—An opinion was filed on August 21 sustaining the constitutionality of the act passed by the New Jersey legislature prohibiting the diversion of potable water in New Jersey to other states. This decision will greatly disappoint Staten Island, which looked to New Jersey to supplement its painfully scant natural supply. In view of the recent scarcity of water in this locality the problem of securing a sufficient supply is serious and the necessity imperative.

PENNSYLVANIA.

Personal.—Dr. James M. Anders, Philadelphia, has returned from his trip to Alaska.

Sanitary Engineer Selected.—Dr. Samuel G. Dixon, state health commissioner, on August 25 appointed F. Herbert Snow, Boston, Mass., chief of the sanitary engineering division of the State Health Department, August 25.

Illegal Practitioner Arrested.—The United States postal authorities have started a crusade to rid Philadelphia of quacks and illegal practitioners who advertise illegal remedies and through the mails suggest illegal operations. Four persons were arrested on this charge August 21 and held, one in $1,000 and three in $800 bail each. The law makes it a criminal offense to suggest by letter where illegal medical advice may be obtained. Besides the four arrests thus far made, convicting evidence has been obtained against several other persons. Since the crusade began many of the malpractitioners have left the city.

Philadelphia Health Report.—The total number of deaths reported for the week ended August 26 aggregated 438. This is the same number as reported last week, and the week before. Such a coincidence has never been known by the local authorities. The health of the city remains good and there is a decrease in contagious diseases. The principal causes of death: Typhoid fever, 10; consumption, 41; pertussis, 5; diphtheria, 5; cancer, 12; apoplexy, 23; heart disease, 35; acute respiratory diseases, 25; enteritis (under 2 years), 59; enteritis (over 2 years), 13; Bright's disease, 39; general debility, 25; marasmus, 17, and injuries and accidents, 8.

No Temporary License.—It is not an uncommon practice for a physician to place in charge of his practice one who *is not* regularly licensed according to the act of assembly governing the practice of medicine in this state. Dr. Henry Beates asserts that the impression seems to prevail that such an appointment is not an infraction of the law. To show that such practice is illegal Dr. Beates has secured an official opinion from the attorney general concerning the subject, which is in part as follows:

> In my judgment this is not in accordance with the Medical Practice Act, which prevents one from opening an office and regularly establishing himself as a practitioner of medicine without having first qualified according to the statute. Duties of this character, requiring special qualifications and subject to government control as a part of the police power of the state, can not be assigned to unqualified persons. The mere fact that the assignment may last but a brief period does not alter the legal aspect of the case. The maxim of the law is *qui facit per alium facit per se*, and the agent in a matter of this sort must have the qualifications of the principal. I see nothing whatever in the law to prevent one qualified practitioner from calling on another qualified practitioner to take charge of his practice during his absence, but there is nothing whatever in the law which permits the substitution for a trained and duly qualified professional man of one who has not complied with the statute, and who, therefore, is not qualified to practice.

WISCONSIN.

Personal.—Dr. Wilbur T. Sarles, Sparta, sailed from Europe September 1.——Dr. Soren Sorenson, Racine, has been appointed head physician of the United Danish Societies of America.——Dr. Henry P. Rhode has been made health commissioner of Green Bay, vice Dr. Francis P. Thibido, who resigned after six years' service.——Dr. Henry L. Barnes, health officer of Ripon, has resigned.

Commissions on Prescriptions.—Dr. Edward A. Taylor, Racine, who was sued by a druggist for a drug bill of $70, which he refused to pay, claiming, it is alleged, that the druggist owed him $200 for business sent by him, was defeated on trial, the judge holding that contracts between physicians and druggists whereby the former receive commissions for sending prescriptions to the latter, are void and that such practices are contrary to public interest.

Must Make Reports.—The State Board of Health has issued a leaflet setting forth the law requiring reports of births, deaths and accidents. The following is a summary:

> The law provides that every attending physician practicing in this state shall report all births, deaths and accidents occurring under his jurisdiction within thirty days from the time of the occurrence.
>
> In cities *births* must be reported to the health officer.
>
> In cities *deaths* must be reported to the health officer.
>
> In cities *accidents* must be reported to the health officer.
>
> In towns and villages births must be reported to the village or town clerk; deaths must be reported to the village or town clerk; accidents must be reported to the village or town clerk. In all cases of death under your professional care you are required to certify to the health officer of cities and to the town or village clerk of towns or villages, the primary and secondary cause of death. The law requires that this shall be done before the burial permit can be issued.
>
> Fees for reporting births, deaths and accidents as above, 25 cents in each case, to be paid by the county in which they occur.

GENERAL.

Cholera in Manila.—A cable from Manila, dated August 25, states that there is an outbreak or cholera in Manila and that several natives and one American woman have died from the disease.

Tri-State Medical Society.—The seventeenth annual meeting of the Tri-State Medical Society of Alabama, Georgia and Tennessee will be held in Chattanooga, Tenn., September 26-28. The secretary is Dr. Raymond Wallace, Chattanooga, Tenn.

Health of Panama.—Acting Assistant Surgeon Mohr of the Public Health and Marine-Hospital Service reports that during July the deaths from all causes officially reported in the municipalities of Colon and Cristal was 72, excluding still births. Malarial fever has been very prevalent among the negroes and natives and is no doubt responsible for a large number of deaths. Recently large numbers of native Colombians have been brought to the Isthmus as contract laborers, and those who come from the interior of Colombia seem to be peculiarly susceptible to both malaria and yellow fever.

Health of Panama Canal Zone.—The June report of Col. F. C. Gorgas, chief sanitary officer, shows that while June, 1905, was not unusually salubrious in the city of Panama, there was nothing extraordinary in its death rate, either as compared with former Junes in the last 22 years or with other months in the last year. On the last of June over 10,000 laborers were on the government rolls. Of this number there were sick every day, on an average, 274, or 27 per thousand, a sick-rate which compares favorably with that of a similar body of laborers anywhere. Twenty-four persons died from all causes. This, if continued for the year, will give a death rate of 28.8 per thousand. In 1881, the first year of the French occupancy of the canal, the death-rate was 67 per thousand, with 11 deaths from yellow fever, a rate of 12 per thousand. During June, 1905, there were only 14 deaths from yellow fever, a rate of 3 per thousand. On the entire isthmus during the month, in a population of about 50,000 people, there were 61 cases of yellow fever with 18 deaths, a rate of about 25 per cent. Of these 61 cases, 30 were employes of the commission, of whom 4 died, a rate of about 14 per cent. Among this number were 15 Americans brought from the United States by the commission. Of these 15 one died. This difference in mortality is ascribed to the fact that the American is, on the average, in the prime of life, and in first rate condition, reports to the hospital as soon as he feels sick, and thus places himself in the best possible condition for recovery. Among the non-employes of the canal, there were 27 cases, of whom 13 died, nearly 50 per cent. These persons usually apply for treatment when they are beyond the possibility of deriving any benefit from it. One case of plague occurred at La Poca, the Pacific terminus of the canal, in the person of a negro laborer, a longshoreman who probably was infected through a cargo coming from some one of the infected ports to the south. A strict quarantine was at once established, and a rat crusade commenced. Only one infected rat was found and no other case occurred. The report also includes a detailed review of the sanitary measures carried out by the commission of the city of Panama in the way of street and yard cleaning, garbage collection, fumigating and yellow fever prophylaxis. The city has been divided into districts, each in charge of a physician who makes a house to house inspection in order that all yellow fever suspects may be isolated and screened at once. The organization of a brigade of rat-killers is also in progress.

THE YELLOW FEVER SITUATION.

CONDITION SEEMS BETTER, BUT GREAT ALARM STILL EXISTS—SYSTEMATIZED INSPECTION BEING ESTABLISHED.

Latest Reports.

Amelioration.—As we go to press fresh news comes from all parts of the stricken region. New Orleans reports that Dr. John Archinard, attached to the Emergency Hospital, believes he has found the germ of yellow fever—an organism resembling the malarial parasite.——Conditions in the city continuing to improve, Surgeon White contemplates the transfer of some of his force to the country, where the cases increase.——Leeville is the worst afflicted locality, but with outside help some improvement is seen.——Allegation comes that the cases at Gulfport, Miss., were deliberately concealed by a diagnosis of malaria to avoid quarantine difficulties. According to the story of the Gulfport woman, who fell ill of the disease on the way to New Orleans, and whose attack led to the discovery of the other cases, some patients in Gulfport had been under physicians' care for fourteen days before she left.——It is reported that Dr. Fitchette, health officer of Natchez, refuses to accept the diagnosis of the county health officer of the presence of yellow fever cases in that town. Surgeon Young, by special train, went from Jackson to Natchez to see the cases.——Alabama has quartined against Natchez.——Texas has applied its quarantine to Memphis and to all of Mississippi.——Lunnenburg County, Virginia, reports a possible death from yellow fever.

The Record to August 30.—New deaths, August 29, 7; total deaths to date, 293; new cases, 80; total cases to date, 2,133; new subfoci, 9; total subfoci to date, 439.

Louisiana.

Record of Cases.—In New Orleans the epidemic record to August 27 was as follows:

New cases reported August 26	31
Deaths reported August 26	13
Total number of cases to August 26	1,755
Total deaths to August 26	260
Death rate of epidemic	14.8 per cent.
New foci of infection	12
Total subfoci to date	390

The reports for the week show a decreasing number of cases, but, toward the end of the week, a rise in the number of deaths. The epidemic in the city appears to be fully under control.——As showing the average health conditions of New Orleans the Board of Health has published the following figures:

Years.	Number of deaths.	Population.	—Death rate per 1,000 per annum.—		
			White.	Colored.	Total.
1899	7,893	300,000	23.39	33.11	26.31
1900	7,424	300,000	20.56	34.44	24.74
1901	6,478	305,000	18.06	29.70	21.24
1902	6,572	310,000	17.91	30.18	21.20
1903	6,705	317,000	18.02	29.82	21.15
1904	6,819	325,000	17.66	30.19	20.98

Between 1879 and 1900 there were 407 deaths from yellow fever. The greatest number of deaths from that disease occurred in 1897, when 298 victims succumbed. There were no deaths from the pest in ten years of that period, and there were none in 1900-1903.——President Charles Janvier of the citizens' committee set a splendid example when arrested for failure to screen his cistern. He explained that he had oiled it, thinking that more effective. Naturally he was set free, but on hearing some adverse criticism he asked to be re-arraigned and fined, which was done.——An unfortunate controversy is being waged between some members of the profession on one side and the Louisiana Board of Health and New Orleans Board of Health on the other. There is talk that the executive officer of each board will be asked to resign. The subject of the controversy is the concealment of the early cases.——In an interview Dr. John Guiteras of Havana said that it was hardly to be expected that the infection could be stamped out before frost. It was under control, but had gone too far to exterminate. He predicted that this was the last epidemic of yellow fever that would ever appear in the United States. In a later interview he predicted that the disease would be stamped out before frost, as the situation has become distinctly better.——At a mass meeting on August 23, called by Dr. Leach of arsenic fame, 300 people denounced the press, the physicians and all health officials, and promised to continue doping with arsenic. This shows clearly that Dr. Leach's presence in New Orleans at this time is wholly harmful and that his desire for notoriety is decidedly uppermost among his motives.——One case discovered August 26 was a patient recently arrived from Gulfport, Miss. Following this up, the authorities found three existing but unreported cases at Gulfport.——The public schools will not open until October 2.——Leeville on August 23 reported 177 cases of yellow fever and 200 cases of dengue.——Arrangements have been made for a drastic campaign of extermination against the disease at the various infected points throughout the state.——On August 29 35 new cases of fever were discovered in Bayou Barataria, Jefferson parish. The tour of investigation had not then been completed. Deaths had occurred and there were neither physicians nor nurses. A relief party was organized at once with physicians, nurses, medicines and supplies to assume charge of the situation.

Other States.

Arkansas.—The State Board of Health on August 21 quarantined against the entire state of Louisiana.

Illinois.—At the end of one week of train inspection at Cairo it is reported that 1,000 passengers had been inspected and 2,000 health certificates issued, seven physicians being kept busy.——Inspectors of the United States Public Health and Marine-Hospital Service have been traveling on trains running from Louisiana and Mississipi to Cairo. On August 23 Dr. Egan, secretary of the Illinois Board of Health, ordered this stopped. Dr. Egan later amended the order to admit such federal inspectors as are yellow fever immunes.——Brownsville on August 23 reported a case of yellow fever from Shreveport, La., but this was later announced as a false report.

Indiana.—Jeffersonville on August 17 had a yellow fever scare regarding the towboat *Sprague*, which was thought to be infected, having had illness on board since it left New Orleans. The health authorities ordered the boat to proceed to its destination, Cincinnati, on pain of the crew's incarceration in the pest house.——The Crawfordsville case, when seen by Dr. A. M. Brighton of Indianapolis, proved to be acute malarial fever.——Dr. Nelson W. Brayton, of the Indianapolis health office and son of Dr. A. H. Brayton, is in New Orleans studying yellow fever.——Michigan City had a small scare in the shape of an acute illness of a woman recently arrived from Arkansas.——Evansville had a supposititious case of yellow fever, but the attending physician and health officer agreed in a diagnosis of typhoid.

Kentucky.—Paducah says that if the State Board of Health persists in refusing permission to quarantine, the City Council will pass a quarantine ordinance in defiance of the board. The town has a new board of health with Dr. S. H. Brothers as president. The dispatch adds: "The old board was against a quarantine."——Jackson, Tenn., has a quarantine against Fulton, Ky., that is very annoying to the latter town.——Members of the board of health of Paducah have been charged by reliable eye-witnesses with selling certificates of health without embarrassing questions to all-comers at $1 each.——Dr. A. T. McCormack, assistant secretary of the State Board of Health addressed the City Council of Paducah, arguing against a quarantine.——The state board issued an order forbidding the Illinois train inspectors to continue their practice of discharging on Kentucky soil all passengers not admissible to Illinois.——Louisville had a small scare over a suspicious case which proved not to be yellow fever.——The city council of Henderson refused to appropriate any money for the board of health to use in preparing the city for possible infection.——The latest word from Paducah is to the effect that every one there, the physicians and board of health excepted, desires a quarantine.

Michigan.—A case of yellow fever was reported at Crockery, Ottawa County, the patient being a man just arrived from New Orleans.

Mississippi.—The early cases of yellow fever at Mississippi City were so light that the physicians mistook them for malaria, so for nearly a month the focus was unrecognized. Of course Governor Vardaman threatened the "extreme penalty" for these physicians if neglect of duty on their part could be proved. Credit for discovery of the case is claimed for Dr. Sanders and others of a party of Alabama health authorities who were making an inspection tour of the Gulf coast of Mississippi. The stegomyia was also found in large numbers.——Most of the remainder of Mississippi has quarantined against its gulf coast towns.——Vicksburg has raised its absolute quarantine against Memphis.——Secretary Hunter of the Mississippi board of health has asked physicians to form local health associations in every county and to hold daily meetings for the discussion of suspicious cases.——Natchez, which "has been tightly bottled up with a shotgun quarantine ever since the infection of New Orleans was reported," on August 26, admitted that it had nine undoubted cases of yellow fever and three cases of suspicious illness. The news caused a panic and the pressure to escape from the city became tremendous. The Marine Hospital Service arranged for special through trains for the north for all who wished to leave and anticipated the departure within 24 hours of fully 2,000 persons.——Gulfport, on August 27, reported three new cases of yellow fever, having already during the week admitted the existence of three other cases.——Jackson, with neighboring towns and counties, has quarantined against Memphis, because a woman just arrived in New Orleans from Memphis, developed the disease.——Mississippi City has been placed under martial law by Governor Vardaman.

Missouri.—The case of yellow fever at Gregory, on the Mississippi River just below Keokuk, proved fatal. The patient was a Greek, said to have come to Gregory from Natchez, Miss. Boats touching at Gregory are not permitted to land in Keokuk.

Ohio.—It was attempted to create some excitement in Cincinnati last week over the approach up the Ohio River of the steamers *Sprague* and *J. B. Finley*, both reported to have yellow fever aboard.

Tennessee.—Search for the stegomyia at Chattanooga is reported to have demonstrated its absence at present.——Memphis reports local railway passenger business at a standstill, while through traffic keeps up pretty well.—On August 22 the Chattanooga quarantine was made still more stringent.

Texas.—A detention camp has been established on Red River for the protection of north Texas.——Orange asked that passenger traffic with Louisiana be forbidden. Here and elsewhere objection is made to the expense of detention camps, it being alleged that Louisiana at its borders should bear the detention expense of its outgoing citizens.——Galveston has been undergoing the most thorough cleaning that it has had in years, if ever.——At San Antonio $3,000 was subscribed by ward canvass and forwarded to the state health officer to aid in the quarantine work for which there is an utterly inadequate appropriation.

CANADA.

Tuberculosis Sanitarium for New Brunswick.—Physicians of New Brunswick are reported to be making an effort to obtain a sanitarium for consumptives. The St. John Medical Society has appointed a committee to collect information and to bring the subject properly before the people. It is hoped that the government will act in the matter at an early date.

FOREIGN.

Plague in the Argentine Republic.—A report from Buenos Ayres states that six cases of plague were discovered recently in Tucman.

Typhoid Fever in New Zealand.—It is reported that there have been a number of outbreaks of typhoid fever among the Maori settlements in North Island.

Typhus Fever in Ireland.—An alarming outbreak of typhus fever is reported from Donegal. Nine families have been attacked and one death is reported. The "contacts" have been isolated.

The Birth Rate in New South Wales.—According to the government statistician's report for June, 1,246 children were born in this province during the month. The excess of births over deaths was 785.

Jenner Memorial Tablet.—On August 9 the London County Council erected a tablet on the house in which Edward Jenner, the discoverer of vaccination, lived during 1803. The tablet is of green encaustic ware.

Yellow Fever in Brazil.—Acting Assistant-Surgeon Stewart reports that yellow fever is prevalent in Para. An Italian opera company there has lost so many members that it will probably be forced to disband.

Plague in Japan.—It is reported that, after a period of quiescence, plague has again made its appearance in Tokio and that the disease seems to be spreading in spite of the rigid quarantine which is enforced.

Asiatic Cholera in Prussia.—A report from Dantzig states that two Russians recently died in Culm, West Prussia, of a disease which was diagnosed as Asiatic cholera. The authorities declare that there is no danger of the disease spreading.

Medical Bequests by Physicians.—THE JOURNAL has chronicled lately a number of bequests by physicians for medical purposes. The latest is from Dr. Toporski of Posen, who left $200 to the local fund for conducting the campaign against tuberculosis.

Reduction of Rates on French Railroads for Members of Tuberculosis Congress.—It is officially announced that membership in the International Antituberculosis Congress, to be held at Paris, October 2-7, entitles one to a reduction of 50 per cent. on the railroads in France.

Second International Milk Congress.—This congress will convene at Berlin October 16-19, and will represent every phase of the milk question. There are to be six sections, one devoted exclusively to legislative measures in regard to the production, distribution, etc., of milk.

Public Disinfecting Plant for Tasmania.—The Tasmania local board of health held a conference June 28 to consider the question of erecting a public disinfecting plant in accordance with the suggestions of the health officer, Dr. Elkington. It is estimated that the capital cost of such a plant would be about $5,000.

Garre Goes to Breslau.—Karl Garré, professor of surgery at Königsberg, has accepted a call to the chair of surgery at Breslau left vacant by the death of Mikulicz. Garré was born Dec. 12, 1857, and is thus in his forty-ninth year. His works on surgery of the nerves, vessels, larynx and alimentary canal have been especially noteworthy.

Celebration of Lucae's Seventieth Birthday.—The present and former assistants of Prof. August Lucae of Berlin presented him with a *Festschrift* in honor of his seventieth birthday, August 24. The famous otologist also received many messages and telegrams of congratulations from friends and scientific bodies at home and abroad.

Smallpox in Chili.—It is reported that there is a severe outbreak of smallpox at Santiago. According to *Public Health Reports*, this is not anything unusual and is probably only a recrudescence of a disease which is always present there and is due doubtless to the cold weather which has been prevalent recently in South America.

Tests of Sight and Hearing for Government Employes.—The German department of public works has ordered that every employé throughout the department is to be tested for vision and hearing in the course of the next five years. Those found defective are to be transferred to posts of lesser responsibility or pensioned out of the service.

Physicians Must Write Legibly.—The authorities in the duchy of Hesse, Germany, have notified druggists throughout the country that when a physician's prescription is written illegibly—as frequently happens—the druggist is not to waste any time guessing at the writer's meaning, but to require from the physician a legible copy or indication of the contents.

Jubilee of the University of Melbourne.—The University of Melbourne attains its jubilee next year and preparations are already in progress to celebrate the event. It has been proposed to erect a pavilion on the cricket ground as a suitable memorial and a committee has been appointed to secure funds. It has been estimated that about $4,000 will be necessary, and of that amount about $2,000 has been promised.

Warning Against Massage and Hypodermics by Irregulars.—The Board of Public Health at Rome has issued a notice warning the public against the dangers of massage, hypodermic injections and operations of any kind by only partially qualified persons, such as nurses, midwives and others. It seems that such practices are becoming prevalent in these circles, and the public is warned of the possible danger in incompetent hands.

Prize for Work on Trachoma.—THE JOURNAL announced some time ago that the government of Hungary had offered a prize of about $500 for the best work offered in competition on the subject of trachoma. The prize was divided and half given to Professor Kuhnt of Königsberg for his essay on the subject of treatment of trachoma. The other half of the prize was not awarded, as no suitable articles on the pathology of the disease were received.

Suggestion for Prize for Remedy for Tuberculosis.—One of the members of the Brazilian parliament recently urged the adoption of a resolution endowing a prize of over a million dollars, to be awarded to anyone discovering a sovereign remedy for tuberculosis. It will be remembered that the French *Académie de Médecine* has an endowment representing an annual income of several thousand dollars, which is awaiting the discoverer of such a remedy.

The Brisbane Hospital.—The financial condition of the Brisbane Hospital is reported to have been very unsatisfactory for some time. At the end of June the executive committee found themselves without funds and in debt for a large sum for current expenses, besides the amount due the government as interest on a loan of $15,000. Finding themselves in this position the members of the committee decided to resign in a body, and the resignations were handed to the home secretary July 10.

New York's Board of Public Health from the German Point of View.—One of the meetings of the Berlin Medical Society this summer was given up to a description of the scope and workings of the New York Board of Health. The speaker was Prof. A. Wassermann, and he drew a very complimentary picture of the great work accomplished by the board, contrasting it with the apathy displayed by the city authorities of Berlin, who, he stated, are far behind the times in the matter of municipal protection of the public health.

A Medical Prince and the Wily Irregular.—A certain Grundlach of Munich recently published a pamphlet denouncing mercurial treatment of syphilis. He represented to Prince Ludwig Ferdinand of Bavaria, who is a registered and practicing physician there, that certain of the medical authorities, citing them by name, indorsed his views. On this representation the prince wrote a complimentary preface to the work. The local medical society at once interviewed the prince, who has since publicly retracted his statements, explaining that they were obtained under false pretenses.

Decline of Cholera in Russia.—The *St. Petersburg med. Wochft.* for August 5 states that it has been officially announced that not a single case of cholera has been known to occur in Russia since April. The suspicious cases at Lodz, Wilna, Tomsk and elsewhere proved to be some other disease on microscopic examination or on the evidence of the course of the disease or the postmortem findings. Sanitary precautions are still maintained along the frontier, but the local campaigns inaugurated at various points have been suspended and the physicians recalled to their posts.

Mortality Among Physicians.—The *Deutsche med. Wochft.* summarizes in a recent issue the article published in The Journal on "The Mortality of American Physicians." It cites in addition the average length of life among the physicians of France as 64.75 years. In the northern regions the average was only 58.3, while it reached nearly 71 in the Albi and Gaillac districts. An unusually large proportion of the medical men of France are now in the seventies. Only one French physician in the last two centuries lived to be over 100, and only 2.16 per cent. passed the ninety mark.

Quinin Prophylaxis of Malaria in Italy.—The *Riforma Medica* for July 22 states that at the last official conference of the Society for the Study of Malaria, Professor Celli related that the number of persons "prophylaxized" with quinin in the Roman district has increased from 1,175 to 30,000 in the last three years, while the number of cases of malaria treated in the hospitals has decreased from 6,000 to less than 3,000 during this time. In the Italian army the morbidity from malaria has dropped from 67 to 10 per cent., and among the railway employes from 69 to 33 per cent. The general mortality has fallen from 13,000 to 7,000 since the legislation was adopted providing free quinin for the people.

Chair of Protozoology in the University of London.—A chair of protozoology has been founded in the University of London. The secretary of state for the colonies offered the university a sum of $35,000 for the establishment of the chair. The *British Medical Journal* states that of this amount $1,000 is a contribution from the Rhodes trustees and that $25,000 represents a moiety of a grant originally made from the Tropical Diseases Research Fund to the Royal Society for the Promotion of Research Work, and surrendered by that society for the purpose of establishing this chair in the university. The university senate has decided to devote the whole amount to defraying the salary of a professor and to set aside a further sum of $1,000 a year for assistants and laboratory expenses.

Organization of the Profession in Germany.—The conflict between the sickness insurance companies and their medical officers over the demand of the latter for increased remuneration when the period of treatment was doubled in length, has been chronicled again and again in these columns. One of the few places where the physicians were supposed to have lost the battle was at Mülheim, where the companies imported enough "strike breakers" to answer their purpose and ignored their former medical officers completely. Time has shown, however, that the medical men willing to serve as strike breakers were below the standard of scientific acquirements required for the positions. One by one they have had to be dismissed and the terms of the former medical officers accepted, followed by their reinstatement.

Political Attitude of Physicians in Russia.—We learn that the editor of the Journal of the National Pirogoff Association, Dr. Popoff, has been held responsible for the revolutionary resolutions passed at the last conference and mentioned in The Journal at the time. The publication was suspended by the authorities and the editor placed under surveillance. The collaborators on the publication and more than fifty of the physicians of Moscow have since voluntarily proceeded to the authorities and announced that they share the views of the editor-in-chief, that they assume equal responsibility with him for the resolutions adopted and for the transactions and comments published in the journal. An all-Russian congress of odontology was recently held at St. Petersburg, and seventy of the members also publicly proclaimed their unqualified endorsement of the revolutionary resolutions passed by the Pirogoff congress.

Sanatoria for Lung Affections in Germany.—The rapid growth of the sanatorium movement in Germany is seen by the statistics recently published There were only three in 1892, and only 13 as late as 1897, while now there are 68 official and 27 private institutions of the kind. The Red Cross took the lead in the movement, but was soon seconded by the societies insuring against sickness. The latter devoted special attention to the curable cases of pulmonary affections, and 11 of these regional sickness insurance societies now have sanatoria of their own, as also a number of cities and communities, including Berlin, Leipsic, Saarbrucken and Wittich. The sanatorium movement was the logical consequence of the compulsory insurance of wage-earners against sickness. The education in hygiene acquired by those taking a course at a sanatorium and sown abroad by them afterward throughout their environment is one of the greatest benefits of the movement.

Infectious Diseases in Australia.—Though scarlet fever was considerably less prevalent in Sydney in 1904 than in 1903, the incidence continued high, and amounted to 2.4 per 1,000 of the estimated population. The recorded monthly number of attacks showed very little fluctuation until August, when it began to rise, reached a maximum of 188 in October, and thereafter fell to 136 in December; 530 males were attacked, as against 831 females. Between December 8 and 24 a localized outbreak of scarlet fever, numbering 23 cases, occurred in adjoining portions of the three contiguous boroughs of Ashfield, Burwood and Drummoyne. This was confined to the customers of a dairy situated in Drummoyne. The outbreak was less sudden in its manifestation than is usually the case with milk epidemics. Fourteen deaths occurred from scarlet fever, corresponding to a mortality of 0.02 per 1,000 of the estimated population of the metropolis. This death rate is the lowest recorded since the year 1900. The case fatality equaled 1.03 per cent. of notified cases, and is lower than that of any year since 1898. More attacks of diphtheria were notified than in any previous year. The number of reported cases was 738, which is equal to an attack rate of 1.43 per 1,000 of the estimated population.

Correspondence

Cats as a Factor in the Propagation of Infectious Diseases.

Worcester, Mass., Aug. 2, 1905.

To the Editor:—A research study is being made at Clark University in reference to the possible causal relation of cats as a factor in propagating infectious diseases, especially those of children.

I wish to make an appeal through your columns to the readers of The Journal who have observed any communication of disease from cats to human beings and to ask them kindly to put me in possession of such facts. This would aid materially in deciding to what extent the cat may be a source of danger in the transmission of communicable diseases.

C. A. Osborne, M.D.

Association News

Next Annual Session.

The next annual session of the American Medical Association will be held in Boston, Mass., June 5 to 8, 1906.

The Card Index and Directory.

Two weeks ago we printed in our advertising pages a blank for information for the Biographical Card Index and for the American Medical Directory. While many have filled out and returned this blank, the number who did so is comparatively few. We include the blank in our advertising pages this week—see page 31—and hope those who have not already done so will fill in the blank, and return it at once. The more cooperation we get in this work the less expense will be attached to it. The ultimate object is not a commercial one, but the good of the profession. It should be understood that the information asked for is primarily for the Biographical Card Index; only a portion will be used for the directory.

Marriages

Sandy B. Harrell, M.D., Nashville, Tenn., to Miss Eva Stockdell, at Atlanta, Ga.

Charles F. Voyles, M.D., Murdock, Ill., to Miss Hazel Wagner of Newman, Ill., August 16.

Charles Gordon Abell, M.D., to Miss Grace Fish, both of Enosburgh Falls, Vt., August 30.

Willard C. Selover, M.D., to Miss Minnie Carson Hill, both of Stanley, N. Y., August 16.

Willard Earl Quillian, M.D., Atlanta, Ga., to Miss Laurie May Cassilly of St. Louis, August 15.

John Steele Sweeney, M.D., Chicago, to Miss Grace Hamilton of Two Rivers, Wis., August 16.

Walter E. Murphy, M.D., Cincinnati, to Miss Mathilde Calhoun of Covington, Ky., August 22.

William N. Stein, M.D., Shanandoah, Pa., to Miss Maggie D. Martin of Blair Hill, Coatsbridge, Scotland, August 23.

Deaths

Jared E. Cone, M.D. State University of Iowa Medical Department, Iowa City, 1882, a member of the American Medical Association, Ohio State Medical Society, Ohio Pediatric Society, treasurer and former president of the Mahoning County Medical Society; coroner of Brule County, S. D., from 1883 to 1886; surgeon to the Mahoning Valley Hospital; one of the most prominent practitioners of Youngstown, Ohio, died at the Mahoning Valley Hospital August 24, from rheumatic endocarditis, after an illness of four weeks, aged 55.

Marcellus H. Felt, M.D. Dartmouth Medical School, Hanover, N. H., 1877, treasurer of the New Hampshire Medical Society for fifteen years and last year its president; a member of the Hillsboro Bridge school board for twenty years; representative in the legislature in 1893 and 1894; state senator in 1902; medical referee for the district, died at his home in Hillsboro Bridge, August 21, aged 60.

Charles H. Andrus, M.D. College of Physicians and Surgeons in the City of New York, 1845, surgeon of the One Hundred and Twenty-Eighth New York Volunteer Infantry, and brigade surgeon in the Civil War; coroner of Dutchess County, N. Y., in 1871; for many years a practitioner of Poughkeepsie, died at the home of his son in Enfield, Mass., August 12, aged 82.

Will Rininger, M.D. Marion-Sims College of Medicine, St. Louis, 1899, a member of the American Medical Association and the St. Louis Medical Society; assistant professor of nervous diseases and internal medicine in the Marion-Sims-Beaumont College of Medicine, St. Louis, and a young man of bright promise, was fatally burned by an explosion of benzine at his home, August 22, and died forty-five minutes later, aged 31.

Franklin Gillespie, M.D. Department of Medicine of the University of Pennsylvania, Philadelphia, 1889, of Oxford, Pa., a member of the American Medical Association, was struck by a train at Barnsley, Pa., while making a professional call, August 23, and died a few hours later, as he was being carried into his house, aged 45.

Robert W. Hinds, M.D. Vanderbilt University Medical Department, Nashville, Tenn., 1902, assistant city bacteriologist and chemist of Atlanta, Ga., and assistant secretary of the State Board of Health, died at his home in Atlanta August 18, from typhoid fever, after an illness of six weeks, aged 26.

William D. Nutter, M.D. University of Vermont Medical Department, Burlington, 1887, of Malden, Mass., and city physician from 1892 to 1895, died on Bustin's Island, Casco Bay, Maine, August 18, after an illness of nearly three years, from diabetes, aged 45.

James Henry Salisbury, M.D. Albany (N. Y.) Medical College, 1850, an early research worker on the germ theory of disease, died at his country home in Dobbs' Ferry, N. Y., August 28, from cerebral hemorrhage, after an illness of four years, aged 81.

John S. Morey, Jr., M.D. Department of Medicine of the University of Pennsylvania, Philadelphia, 1877, some-time postmaster of Royersford, Pa., died at his home in that place August 18, after a long illness, from cerebral hemorrhage, aged 59.

Joseph Plumb Cochran, M.D. College of Physicians and Surgeons in the City of New York, 1877, a native of Oroomiah, Persia, who built the first hospital in Persia, died recently at his home in Oroomiah, from typhoid fever, aged 50.

Joseph Baldwin Amos, M.D. University of Maryland School of Medicine, Baltimore, 1854, one of the oldest practitioners of Pennsylvania, died at his home in Chanceford, York County, Pa., August 20, after a prolonged illness, aged 79.

John A. Morton, M.D. Medical School of Maine at Bowdoin College, Brunswick, 1862, assistant surgeon of the Twenty-fourth Maine Volunteer Infantry during the Civil War, died at his home in Bethel, Maine, August 17, aged 71.

George B. Nichols, M.D. Castleton, (Vt.) Medical College, 1852, said to have been the oldest practitioner in Allegan County, Mich., died at his home in Martin, Mich., August 15, after an illness of several weeks, aged 72.

Edward Erskine, M.D. Michigan College of Medicine and Surgery, Detroit, 1891, a member of the American Medical Association, and an old resident of Rogers City, Mich., died at his home in that city, August 12.

Charles W. Fordyce, M.D. College of Medicine University of Southern California, Los Angeles, 1905, an interne in the German Hospital, Los Angeles, was drowned while swimming in the Kern River, August 20.

S. B. Hotchkiss, M.D. Bellevue Hospital Medical College, New York City, 1871, who had been an invalid for seven years, died suddenly at his home in Edinboro, Pa., August 16, from angina pectoris, aged 63.

Jacob W. Mooar, M.D. Dartmouth Medical School, Hanover, N. H., 1862, surgeon during the Civil War and an old practitioner of East Manchester, N. H., died at the Elliott Hospital, Manchester, August 12.

Marion Wells Thomas, M.D. University of Michigan Department of Medicine and Surgery, Ann Arbor, 1898, a medical missionary, died at her station on Bahrein Island, Persian Gulf, recently, aged 31.

Charles E. Bushnell, M.D. University of Vermont Medical Department, Burlington, 1869, died at his home on Smith Hill, Winsted, Conn., August 19, from heart disease, after a long illness, aged 61.

John Gorin Harvey, M.D. University of Louisville (Ky.) Medical Department, 1862, died at his home in Blue Mound, Ill., August 16, from general debility, after an illness of one year, aged 66.

Henry W. Giles, M.D. Albany (N. Y.) Medical College, 1874, who never practiced medicine, but devoted himself to his profession of music, died at his home in Albany June 5, after a long illness.

John M. McGroth, M.D. Department of Medicine of the University of Pennsylvania, Philadelphia, 1858, of Philadelphia, surgeon during the Civil War, died at Delair, N. J., August 22, aged 71.

Edmund W. Holmes, M.D. Department of Medicine of the University of Pennsylvania, 1880, of Philadelphia, died suddenly from heart disease in a street car in that city, August 28.

Augustin S. Clark, M.D. Starling Medical College, Columbus, Ohio, 1860, one of the oldest physicians of Washington County, Ohio, died at his home in Beverly, August 18, aged 84.

Lorenzo Traver, M.D. Albany (N. Y.) Medical College, 1857, from 1861 to 1868 acting assistant surgeon, United States Navy, died recently at his home in Providence, R. I., aged 70.

Lewis W. McCawley, M.D. Barnes Medical College, St. Louis, 1900, of Kell, Ill., was drowned while fishing in the Little Wabash River near Clay City, August 17, aged 31.

Charles N. Frederick, M.D. Department of Medicine of the University of Pennsylvania, Philadelphia, 1865, of Valley Forge, Pa., died at Strafford, Pa., August 19, aged 66.

Sarah B. Fleming, M.D. College of Medicine, Syracuse (N. Y.) University, 1873, died at her home in Coronado, Cal., August 25, after a long illness, aged 74.

Louis Gustave Guibert de la Mache, M.D. Ohio Medical University, Columbus, 1903, died from articular rheumatism at his home in Arnold, W. Va., August 15.

Ferdinand S. Overfield, M.D. University of Heidelberg, Germany (Years of Practice, Illinois, 1887), died at his home in Brookville, Ill., August 16, aged 76.

Seth Grout, M.D. University of Michigan Department of Medicine and Surgery, Ann Arbor, died suddenly at his home in Auburn, Kan., August 5, aged 72.

William J. Andrew, M.D. Manitoba Medical College, Winnipeg, 1903, of Winnipeg, died at the Winnipeg General Hospital, August 20, from scarlet fever.

William D. Pettus, M.D. University of Nashvile Medical Department, 1868, died at his home in Republic, Ala., August 14, after a lingering illness, aged 62.

David A. Baldwin, M.D. New York University, New York City, 1849, died at his home in Englewood, N. J., August 11, from senile debility, aged 79.

John Gray Hughes, M.D. Jefferson Medical College, Philadelphia, 1853, died at his home in Altoona, Pa., from heart disease, August 23, aged 77.

Edward W. Doty, M.D. Long Island College Hospital, Brooklyn, N. Y., 1886, formerly of Paterson, N. J., died in Dover, N. J., August 20, aged 49.

George M. Rice, M.D. Hospital College of Medicine, Louisville, 1894, died from tuberculosis at his home in Powersburg, Ky., August 20, aged 38.

Tilghman D. Koons, M.D. Pennsylvania, 1878, while despondent, shot and killed himself at his home in Philadelphia, August 22, aged 52.

John Ebeling, M.D. New York City, 1882, of New York City, died suddenly, August 20, while on his way to Pine Ridge, N. J.

Deaths Abroad.

K. Wernicke, M.D., one of the most prominent neurologists of the day, succumbed recently to the immediate consequences of a bicycle accident while on a tour in Thuringia, aged 57. His labors to supply a scientific foundation for psychiatry in the pathology of the brain have accumulated a wealth of data which will supply a field for research for many years to come. He was one of the principal creators of the modern anatomy of the brain, and was the originator, at 26, of the present conception of aphasia and its pathologic basis. Fuchs styles this "the first work that bridged the gap between mental disease and morbid processes in the brain." Wernicke was the first to describe the pupil reaction in hemianopsia and the processes in hemorrhagic polioencephalitis. He studied medicine at Breslau and was assistant to Neumann and Westphal for a time, was appointed professor at Breslau in 1890 and at Halle in 1904. History records that he was the first to locate a neoplasm in the brain and systematically proceed to order its removal. This was as long ago as in 1882, and he is thus said to be the founder of surgery of the brain.

P. Schech, M.D., professor of laryngology at Munich, died July 1, aged 60. He bequeathed $500 to the local endowment for the widows and orphans of physicians.

W. Flemming, M.D., professor of anatomy at Kiel, noted for his pioneer research on cell development and pathology, died at Kiel, August 5, aged 62.

B. Honsell, M.D., professor of surgery at Tübingen, died at Carlsruhe, July 22, after a long illness, aged 35.

E. Schonberg, M.D., professor of gynecology and pediatrics at Christiania, died July 20.

F. Fischer, M.D., professor of surgery at Strasburg, died July 9, aged 50.

L. D. Moussons, M.D., professor of gynecology at Bordeaux, died July 7.

The Public Service

Army Changes.

Memorandum of changes of stations and duties of medical officers, U. S. Army, week ending Aug. 26, 1905:

Kennedy, James M., asst. surgeon, ordered to accompany 17th infantry from Presidio of San Francisco, to Fort McPherson, Ga., then return to his station.

Baker, Frank C., asst. surgeon, ordered to proceed with infantry team from Fort Sheridan, Ill., to Sea Girt, N. J., to take part in *national match*.

Krebs, Lloyd Le R., asst.-surgeon, assignment to duty in the United States Transport Service revoked.

Porter, Ralph S., asst.-surgeon, assigned to temporary duty as transport surgeon on the *Buford* during the next voyage to Manila, where he will report for assignment in compliance with orders heretofore issued.

Metcalfe, R. F., asst.-surgeon, assigned to temporary duty as surgeon on the *Buford* during the next voyage of that transport from Manila, P. I., to San Francisco, Cal., and on arrival at the latter place to report by telegraph to the Military Secretary of the Army for orders, as heretofore directed.

Boyer, Perry L., asst.-surgeon, granted one month and eight days leave of absence, with permission to apply for two months' extension.

Yost, John D., asst.-surgeon, advanced to rank of captain, to date from July 2, 1905.

Rutherford, H. H., asst.-surgeon, advanced to rank of captain, to date from Aug. 16, 1905.

Crabtree, Geo. H., asst.-surgeon, will make one visit per day from Fort Jay, N. Y., to Fort Wood, N. Y., during the illness of the surgeon at that post.

Kennedy, Jas. M., asst. surgeon, granted 30 days' leave of absence, to take effect on completion of duty with troops to Fort McPherson, Ga., with permission to apply for thirty days' extension.

Duncan, Wm. A., asst.-surgeon, relieved from duty at Fort Leavenworth, Kan., and ordered to Manila, P. I., for duty in Philippines Division.

Harris, Jesse R., asst.-surgeon, leave of absence further extended thirty days.

Carroll, James, asst.-surgeon, detailed to represent medical department of the Army at the thirty-third annual meeting of the American Public Health Association, to be held at Boston, Mass., Sept. 25 to 29, 1905.

Hansell, H. S., asst.-surgeon, ordered, on departure of Company B 9th Infantry from Pekin, China, to proceed to Manila, P. I., and report to commanding general, Philippines Division, for assignment to duty.

Shellenberger, James E., contract surgeon, granted leave of absence for one month.

Long, Charles J., dental surgeon, left Fort Snelling, Minn., on [illegible] one month and seven days.

[illegible], contract surgeon, departed from Vancouver [illegible] on three months' leave of absence.

[illegible] contract surgeon, will proceed from Vancouver Barracks, Washington, to Fort Walla Walla, Washington, for duty, to accompany headquarters band and Troops A, B and C, 4th Cavalry, to San Francisco, Cal., on completion of which he will return to his proper station.

Whitney, W., contract surgeon, left Columbus Barracks, Ohio, with detachment of recruits en route to Fort McDowell, Cal.

Stone, Frank P., dental surgeon, leave of absence extended seven days.

Slater, Ernest F., contract surgeon, left Fort Hancock, N. J., on leave of absence for seven days.

Girard, Joseph B., asst. surgeon general, ordered to proceed to Manila, P. I., for duty in Philippines Division.

Navy Changes.

Changes in the Medical Corps U. S. Navy for the week ending Aug. 26, 1905:

Peck, A. E., P. A. surgeon, commissioned P. A. surgeon with rank of lieutenant from March 27, 1904.

Russell, A. C. H., surgeon, detached from the *Newark* and ordered to the Bureau of Medicine and Surgery, Navy Department.

Stepp, J., P. A. surgeon, detached from the *Topeka* and ordered home to wait orders.

Wood, F., pharmacist, retired, detached from the Naval Medical School, Washington, D. C., and ordered home.

Public Health and Marine-Hospital Service.

List of changes of station and duties of commissioned and non-commissioned officers of the Public Health and Marine-Hospital Service for the seven days ending Aug. 23, 1905:

Stoner, J. B., surgeon, granted seven days' leave of absence from Aug. 9, 1905.

Stansfield, H. A., P. A. surgeon, directed to report at Bureau.

Stansfield, H. A., P. A. surgeon, granted leave of absence for one month, or so much thereof as may be necessary, on account of *sickness*.

Gustetter, A. L., acting assistant surgeon, granted leave of absence for ten days from Aug. 16, 1905.

Stevenson, J. W., acting assistant surgeon, directed to report at bureau for consultation.

Troxler, R. F., pharmacist, granted seven days' leave of absence from Aug. 16, 1905, under paragraph 191 of the regulations.

Hall, L. P., pharmacist, leave of absence for thirty days, *amended* to read twelve days from Aug. 4, 1905.

BOARD CONVENED.

Board to meet at San Francisco, Aug. 24, 1905, for physical examination of Engineer Maxwell, Revenue Cutter Service. P. A. Surgeon J. M. Holt, chairman. Acting Asst.-Surgeon A. Weeks, recorder.

Book Notices

First Aid for Persons Overcome by Gas. Cloth. Pp. 15. With 15 Illustrations. Philadelphia: United Gas Improvement Co.

This little booklet gives valuable instruction in caring for and resuscitating individuals overcome by gas. The methods of performing artificial respiration, etc., are shown by means of excellent illustrations. While primarily intended for the laity, it should be a valuable addition to the physician's library. For a gas company to issue such a book is distinctly to be commended, being in line with the discussion quoted in The Journal July 15, 1905, page 211.

Frames and Lenses. A Practical Treatise for Optometrists. Illustrated. By R. M. Lockwood. Paper. Pp. 87. New York: Frederick Boger Publishing Co.

This book describes the manufacture of lenses, the manner of surface polishing and of testing the uncut lenses. Two chapters are devoted to facial measurements and emphasis is laid on the importance of accuracy. The little book will interest any one who prescribes glasses.

Select Methods in Food Analysis. By Henry Leffmann, A.M., M.D., Ph.D., and William Beam, A.M., M.D., F.I.C. With 55 Illustrations. Second Edition. Revised and Enlarged. Cloth. Pp. 396. Price, $2.50 net. Philadelphia: P. Blakiston's Son & Co. 1905.

One of the most popular of the series of analytical books of Dr. Leffmann now in the second edition. Revised and brought up-to-date, having largely drawn on the excellent work now done in this country in the line of food analysis by government and state and by local boards and associations. Many additions are noted, such as detailed descriptions of special arrangements for polarimetry, distillation and extraction, new processes for detection of colors used as substitutes for natural colors of fruits and eggs; improved methods for detection of formaldehyd and saccharin; rapid methods for examination of vanilla and lemon essences; for determining fat in condensed milk and cereal foods, boric acid in fruit juices, together with analytic data concerning preserved fruits and their preparations. While no information concerning the lines in regard to adulteration or discussion of food standards are given, the U. S. Government standards are included as official interpretation of analytic data.

Outlines of Inorganic Chemistry. By F. A. Gooch and C. P. Walker. Cloth. Pp. 514. Price, $1.75 net. New York: The MacMillan Co. 1906.

The subject is presented through such experimental work as has long been tested in college and in such relation as to facilitate drawing the deductions essential to a proper comprehension. The consecutive experimental development of the principles on which systematic chemistry rests is considered, together with the electrical phenomena and ions and the constitution of the acids, bases and salts from the ionic point of view, and the thermal relations based on the recognition of equivalents, electrical, chemical and thermal. The molecule in its relation to the atom, in the light of the kinetic theory of gases, in the theories of Van t'Hoff and Werner, the phenomena of solutions, the electrolytic theory of dissociation and the modern conceptions of the ions are all discussed. The elements, their compounds and properties are considered in accordance with the periodic system. Graphic symbols are used because their real functions for co-ordinating facts are rarely misinterpreted. The ionic terminology is employed and the functions of ions are pointed out, but the extreme developments of free ions have not been introduced.

Manual of Gynecology. By D. Berry Hart, M.D., F.R.C.P.E., F.R.S.E., Lecturer on Midwifery and Gynecology School of the Royal College, Edinburgh, and A. H. Freeland Barbour, M.A., B.Sc., M.D., F.R.C.P.E. F.R.S.E., Lecturer on Midwifery and Diseases of Women, School of the Royal Colleges, Edinburgh. With 12 Lithographs and 359 Woodcuts. Sixth Edition. Cloth. Pp. 736. Price, $6.00. Chicago: W. T. Keener & Co. 1905.

In this, the sixth edition of this manual of gynecology, the whole text has been carefully revised and brought up to date. The subject matter is well arranged and the illustrations are excellent. The appendix includes a chapter on preparation for and technic of abdominal section in gynecologic cases, and a practical method of taking histories in these cases. There is also a very complete list of works on gynecologic subjects in English, German and French, with authors, which should facilitate reference work.

A Hand-Book of Nursing. Revised Edition. For Hospital and General Use. Published under the Direction of the Connecticut Training-school for Nurses. Cloth. Pp. 319. Price, $1.25. Philadelphia: J. B. Lippincott Co. 1905.

This book is distinguished from some other works on the same subject by providing instruction for hospital nurses in preparation for their work later in private families. The nurse's relation to the patient, to the family and to the physician are clearly set forth. The chapter on family hygiene, while not exactly pertaining to nursing, is of practical value.

Miscellany

THE LANE LECTURES.

INTERESTING ACCOUNT OF THIS SERIES OF LECTURES AT COOPER MEDICAL COLLEGE, SAN FRANCISCO.

The Lane Lectures for 1905 were delivered during the week beginning August 13 by Sir Patrick Manson, the eminent authority on tropical diseases, who took for his subject some of the more important aspects of tropical medicine. Sir Patrick began his first lecture by remarking that thirty years ago there was no tropical medicine to speak of, and cited various important diseases discovered since that time to substantiate this view. He pointed out the importance of helminthology in the study of disease, and suggested that it served as an excellent introduction to the study of the more complicated bacteriology. He spoke of the increasing importance of the protozoa in pathology, and the gradual usurpation of this class of parasites of the premier place hitherto held by bacteria. The great importance of insects in the transmission of certain classes of disease was discussed in a general way, the work of Ross receiving special attention. After these introductory remarks, and a few words as to the likelihood of San Francisco becoming a center for tropical disease, the speaker briefly outlined the ground which he proposed to cover in his course of ten lectures.

The first lecture was mainly taken up with the consideration of certain general principles determining the occurrence of disease in the tropics. The speaker pointed out first that like the larger animals and plants, disease germs were unevenly distributed over the earth. The important factor in determining differences in distribution is the climate, and particularly the temperature. As a result of climatic differences the regular flora and fauna vary in different climates but the bacterial flora and fauna show no such marked variation in distribution as their normal habitat is the body of man, which shows practically no variation in different parts of the world. Though practically all the diseases of temperate climates can flourish in the tropics there are some tropical diseases which can not spread in temperate climates even if they are introduced there. In connection with the introduction of tropical diseases into colder climates the lecturer spoke of the latency of certain tropical diseases, a factor which is often overlooked, and which leads to errors in diagnosis. He cited as examples cases of blackwater fever and sleeping sickness which had developed in England months or even years after the individual had been in the tropics. After referring to one or two diseases, as tinea impricata and pinta, which can not be exported from the tropics because the moisture and temperature conditions are lacking elsewhere, the lecturer explained why certain tropical diseases can be exported to, but can not be spread in, temperate climates. The reason generally has to do with the life history of the parasite causing a given disease during the period in which it is passing, or being carried from one human host to another. Some parasites, as the uncinaria, have undergone development in earth for a certain period of time before they can reinfect man. If this earth is not of the proper temperature the embryos cannot develop and therefore are incapable of infecting man. Other parasites need for their development water at a certain temperature found only in tropical countries. Again an intermediate host, found only in the tropics, may be needed for the full development of the parasite, or the parasite may be unable to escape from the body without the aid of some tropical suctorial insect. In other instances some large

modified in the case of vaccinia, by its passage through the cow. He showed that the life history of this parasite outside of the body is only imperfectly known, though it seems probable that a fly of some sort acts as an intermediate host.

Several lectures were then devoted to the discussion of the diagnosis of malaria, and the several tropical diseases which are commonly confused with it. In the diagnosis of malaria the lecturer emphasized three points; the periodicity of the paroxysms, the blood examination, and the therapeutic test. Mediterranean fever, liver abscess, relapsing fever, tropical febrile splenomegaly, and leprosy were all mentioned as tropical diseases likely to be mistaken for, and treated as malaria. The differential diagnosis of these different conditions was fully discussed, and several points of importance were brought out. In connection with Mediterranean fever Dr. Manson emphasized the lack of value of the serum test under ordinary circumstances. He pointed out that the condition of the culture of *Micrococcus melitensis* was of great importance, as was the personal equation of the observer. In the remarks on liver abscess stress was laid on the insidious character of the symptoms. In discussing this point the lecturer brought forward two aphorisms which he had formulated as a result of his experience in China, where he observed a great deal of liver abscess and thoracic aneurism. These were, to suspect thoracic aneurism in all obscure non-febrile thoracic complaints, and to suspect liver abscess in all obscure febrile abdominal conditions. In diagnosis of liver abscess the necessity of repeated exploratory needle punctures was emphasized, and it was advised that such punctures be always done under an anesthetic, and that when the abscess was found the needle should be left *in situ*, and operation proceeded with immediately.

In the ninth lecture Sir Patrick Manson briefly considered the treatment of the diseases he had previously discussed, and also that of dysentery and sprue. As a prophylactic measure he advised cautioning all patients leaving the tropics that they should continue precautionary measures against tropical diseases for at least six months after their departure. In considering dysentery physicians were advised to regard it as, in a sense, a surgical condition, and to look on the intestinal canal as a large drainage tube. The principles of treatment included the removal of the discharges from the ulcers, and the use of agents having a direct effect on the specific causes of the disease. The treatment advocated consisted in absolute rest, the reduction of food to a minimum for a time, mild catharsis, preferably with small doses of castor oil, and the internal administration of ipecac. The latter drug Dr. Manson regards as almost specific, and thinks it has fallen into disrepute, especially in the United States, on account of its improper use. In the treatment of sprue, which the lecturer regarded as a very dangerous disease if improperly treated, absolute rest, a restricted diet of milk, and in some cases strawberries was recommended. In some cases scraped meat was allowed. The rest and the restriction of the diet until at least six weeks after the stools became normal was insisted on.

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The final lecture was closed by a plea for the teaching of tropical medicine as a special study for those whose work was likely to take them to the tropics. San Francisco was considered by the lecturer to be the most favorably situated city in the United States for the establishment of a school of tropical medicine, and this was suggested. Education of school children in tropical districts and of government employes was also insisted on, and especial stress was laid on the necessity for education regarding the rôle which insects play in the transmission of tropical diseases.

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Therapeutics

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The author states, in relation to cardiac treatment, that arrangements must be made for the administration of oxygen to be commenced early and given continuously, as a valuable aid to the heart against fatigue, and not postpone its administration until the desperate state is reached. It has the advantage over the continuous administration of alcohol in being harmless and in not affecting the alimentary tract. The glass funnel should be avoided in the administration of oxygen as very unsuitable. The best means is to place the end of the tube between the lips or immediately in front of the mouth. He recommends leeches applied early to the seat of pain, and makes this a part of the treatment regularly. He also recommends the early application before the deposition of fibrin has taken place and not their application during the stage of exhaustion.

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As to the medicinal treatment, the chief aims are to promote diaphoresis, diuresis, fibrinosis and absorption. To meet these indications the author recommends a combination of ammonium citrate and sweet spirits of nitre together with warm beverages. To improve the cardiac condition he recommends gin as superior to alcohol in some respects, as it is a better diuretic. Oxygen, as has been stated, is recommended early in the disease, and sound sleep as peerless in keeping up the heart's strength.

In order to check the tendency to coagulation, citric acid is recommended as a precipitant of calcium, which aids clotting. The carbonates and iodids act similarly, but the carbonates tropical animal carries the cause of a given disease in its body and keeps it alive until the necessary human victim comes along. In certain toxic diseases certain media found only in the tropics, and a tropical temperature may be needed before the poisons will develop.

As his first example of a disease whose parasite needed intermediary development at a high temperature Sir Patrick Manson cited ankylostomiasis (uncinariasis). In a general way he traced out the factors concerned in the spread of the disease and in its prevention. He supported Loos' view that infection occurs through the skin, cautioned as to the danger of the disease spreading, and emphasized the necessity for examination of the stools in all obscure and resistant cases of anemia. He emphasized the danger from Porto Ricans, already pointed out by Gunn, and called attention to the Chinese as sources of infection.

He next considered diseases in which the embryo escapes into water and undergoes development in the interior of water animals before becoming infective for the human being. As an example of this form of infection he cited dracontiasis or guinea-worm disease. He gave an interesting description of the life history of the guinea worm (*Dracunculus medinensis*) showing that in all probability it penetrates through the skin, especially in those portions most likely to come in contact with water, giving the history of its development in the subcutaneous tissues, its approach to the surface when it is full of embryos, and its method of expelling these when the infected part is brought in contact with water. He described the life history of the embryos in water, their development in certain varieties of cyclops, and their probable fate so far as this could be surmised from knowledge and analogy. He advised American physicians to be on the lookout for this disease in those returning from the tropics with small leg ulcers with central openings, and cautioned against meddlesome attempts at removing the worm before all its embryos had escaped, which treatment he aptly compared to meddlesome midwifery. As a second example of this type of disease he cited the parasitic hemoptysis of Formosa and Japan, due to infection with the lung fluke (*Paragonimus westermanii*). He pointed out that this parasite has been described by Ward and others in the United States in cats, dogs, and pigs, and hazarded the opinion that human infections would, in the course of time, be discovered here. He described the life history of the organism as far as known, and pointed out the necessity for wider knowledge, as, once in the body, we are powerless to remove the flukes, except in rare cases of brain infection with localizing symptoms. The third form of parasite requiring development in water which the lecturer described was the *Schistosomum hematobium*, the cause of bilharziasis. He described the life history of this trematode in the body, showed that the localization of the ova in the bladder and rectum resulted from an attempt to reach the outer world and their natural habitat water, and described the development of the embryo from the egg as far as this is known. Attention was called to the fact that the disease exists in the West Indies, has been imported into the United States, and may become distributed in this country. The lecturer called attention to the new Asiatic representative of this family, the *Schistosomum cattoi*, and in discussing the peculiarities of the eggs of the vesical and rectal infections, suggested that there were probably several varieties of Schistosomum. He dwelt on the susceptibility of cats to this infection as a factor which made the possibility of infection of this country more likely, and suggested the examination of the urine in all doubtful cases of hematuria, and of the feces in all obscure rectal irritations for the characteristic ova.

Dr. Manson then took up the discussion of those tropical diseases which are limited in range on account of requiring certain suctorial insects as intermediate hosts. He considered first the various forms of filariasis, pointing out that the canine form occurs in this country, and that other forms may occur. He described the habitat of the adult worm in the lymph vessels, the passage of the embryos into the blood, their removal by certain varieties of mosquito, and their subsequent development in the stomach and muscles of the host. He then described how they passed into the neighborhood of the proboscis, and escaped into the new human host at the time that the insect bit. He discussed the relation of this form of infection to endemic elephantiasis, lymph varices, and chyluria, and remarked on the mystery of the periodical disappearance of the embryos from the blood, which has never been satisfactorily explained. Malaria was next considered, and a very interesting comparison was drawn between the early stages of the filarial embryo and the malarial parasite; in both diseases the parasite reaches a non-motile or restrictedly motile stage in the blood, in both instances it is protected from injury by a covering (in the filaria its sheath and in the plasmodium the red corpuscle), and both parasites undergo further development only in the tissues of the mosquito. The description of the malarial parasite was clear and interesting, and the relation of this disease to the mosquito was proved, as the lecturer said, "to the hilt." Dr. Manson expressed the belief that mosquito transmission was probably the only method of transmission of this disease. The prophylaxis of the disease, and the history of its introduction into new territories was discussed.

The subject of trypanosomiasis, and the relation of trypanosomes to sleeping sickness was next discussed. A clear clinical description of infection with the *Trypanosoma gambiense* followed the lecturer's remarks on the structure of trypanosomes in general. This form of trypanosomiasis is characterized by a low form of fever, muscular weakness, an erythematous skin eruption of a smudgy ill-defined character, patchy edema, tachycardia, enlargement of the spleen and lymph glands, and an increase in the large mononuclears of the blood. In connection with trypanosomic infections Dr. Manson discussed at length the relation of these parasites to sleeping sickness. He described the spread of this peculiar and fatal disease from a small area on the West coast of Africa to the East Coast, and commented on the ravages it had made in certain sections, particularly in Uganda. *He graphically* described the clinical picture, the low fever, the *headache*, lassitude followed by lethargy, the pessimistic and morose mental condition, the enlargement of the *spleen and* lymph glands, and the pruritus. He compared *the disease* with general paresis both in its clinical and pathologic manifestations. In his historical sketch of the disease he pointed out that it had been imported into the United States many times in the *days of slavery, but had never* spread. In discussing the relation to trypanosomes he took a conservative stand, and suggested that though there was in all probability an etiologic relationship further research was necessary.

The lecturer then described a closely allied form of infection, kala-azar, or as he preferred to call it, tropical febrile splenomegaly. This also is a chronic febrile disease characterized by fever of a variable type, anemia, prostration, and emaciation; the liver and spleen are always enlarged, sometimes very markedly. The disease seems to be almost invariably fatal. So far this disease has not been described in the western hemisphere, but is limited *to Africa*, India, and China. In Assam it has in recent years almost decimated the population in some districts. The recent discovery of the parasite by Leishman was interestingly described, and its oval form, macronucleus and micronucleus, and grouping into masses were pictured. Its close relation *to* the trypanosomes, and the demonstration of *this by* the cultural work of Rogers was mentioned. Attention was also called to the valuable work of Wright of *Boston in* connection with oriental sore, in which it was *shown that* this condition is associated with what is morphologically an identical parasite. Dr. Manson suggested that *in tropical* febrile splenomegaly the parasites leave the body by means of surface sores or intestinal ulcerations. He pointed *out* the difficulty of explaining the fact that tropical febrile splenomegaly, a very fatal disease, and oriental sore, a non-fatal disease, are associated with what appears to be *the same parasite*. He cited a belief that oriental sore occurred only in countries where camels are found, and suggested that it might be due to the action of the parasite modified by passage through the camel, while tropical febrile splenomegaly might be due to the same parasite unmodified. This supposition would assume an analogy to smallpox and vaccinia which are due to the same germ, modified in the case of vaccinia, by its passage through the cow. He showed that the life history of this parasite outside of the body is only imperfectly known, though it seems probable that a fly of some sort acts as an intermediate host.

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In order to check the tendency to coagulation, citric acid is recommended as a precipitant of calcium, which aids clotting. The carbonates and iodids act similarly, but the carbonates should be avoided in pneumonia because of the gastric inflation produced, which is indirectly very detrimental to the heart's action. The iodids, however, are highly recommended in the treatment of this disease, as diminishing the tendency to coagulation and, on the other hand, increasing absorption of the fibrinous deposits. He recommends it in doses of 60 grains (4.00) a day, or more, if necessary. A combination similar to the following is recommended:

℞.	Potass. iodidi	gr. v		30
	Liq. ammon. cit	ʒii	8	
	Spts. etheris nitrosi	ʒss	2	
	Spts. ammon. arom	m. xx	1	30
	Aquæ chloroformi q. s. ad	℥ss	15	

M. Sig.: One tablespoonful diluted, to be taken every hour for six doses, then every three hours.

Colchicum in Gout.

The following combinations by Beasley containing colchicum are recommended in the treatment of gout:

℞.	Ext. colchici			
	Ext. rhei			
	Ext. aloes soc., āā	gr. xxx	2	
	Ext. belladonnæ	gr. v		30

M. Ft. pil. No. xxx. Sig.: One pill twice a day. Or:

℞.	Pulv. colchici sem.	gr. lxxii	4	75
	Sodii salicylatis			
	Magnesiæ (calcined), āā	ʒii	8	

M. Ft. cachet No. xxiv. Sig.: One every four hours. Or:

℞.	Colchicinæ salicylatis	gr. ss		03
	Methyl salicylatis	ʒiiss	10	
	Ol. menth. pip	m. xxx	2	

M. Ft. cap. No. xxx. Sig.: One capsule three times a day. Or:

℞.	Tinct. colchici	ʒiss	6
	Tinct. cimicif.	ʒi	4
	Tinct. bellad.	ʒss	2
	Sodii bicarb.	ʒiii	12
	Inf. gent. co. q. s. ad	℥vi	180

M. Sig.: Shake the bottle and take one tablespoonful in water every four hours. Or:

℞.	Tinct. colchici	ʒiii	12
	Tinct. bellad.	ʒi	4
	Lithii citratis	ʒii	8
	Elix. simplicis q. s. ad	℥iii	90

M. Sig.: One teaspoonful after meals, in water.

In cases of gouty rheumatism the following combinations are recomemnded:

℞.	Vini colchici	ʒi	4
	Magnes. sulph.		
	Potass. bicarb., āā	ʒiv	15
	Sodii salicyl.	ʒiss	6
	Aquæ chloroformi q. s. ad	℥iv	120

M. Sig.: One tablespoonful with a teaspoonful of lemon juice, while effervescing, three times a day. Or:

℞.	Colchicinæ salicyl	gr. ss		03
	Acidi salicylici	ʒiss	6	

M. Ft. pil. No. xxx. Sig.: One pill every four hours during the day.

Prophylaxis of the Diarrheal Diseases of Childhood.

Dr. Seneca Egbert, in *Med. Bull.*, states, for an efficient prophylaxis of the diarrheas of children, that both the predisposing and exciting causes must be considered. Among the former heat is a most powerful factor. Everything possible should be done to keep the babies cool; the clothing should be reduced to a minimum consistent with safety, keeping in mind the possibility of sudden changes in temperature and the dangers which may arise therefrom in the way of deranging the intestinal functions.

Living and sleeping rooms should be kept as cool and as well ventilated as possible. The fear of "night air" should be removed from the minds of the patients. The country or seashore is much preferable during the heated term to the city. If necessary to keep the body temperature down, the bath should be resorted to frequently—twice or three times a day, if necessary—and the baby should be given plenty of clean, sterile and cool water to drink. Milk is the most important article of diet during the first year or so of the infant's life and up to the first quinquenium. It should be pure and not over forty-eight hours old, and should be sterilized or pasteurized soon after taken from the cow. Cleanliness to the extreme should be observed with everything about the child. Napkins and soiled clothing should be promptly boiled or sterilized, as most of the diarrheal discharges are probably infectious.

The importance of excluding house flies and other insects from access to the infants not only to prevent any disturbance of their sleep, but to prevent the carrying of infection from fecal discharges and transmitting germs of the most harmful character.

Laryngeal Manifestations of Influenza.

E. J. Moure, in the Pract. Med. Series of "Year Books," states that the laryngeal manifestations of influenza are found under four forms: 1, The catarrhal form; 2, the infiltrated edematous form; 3, the ulcerative form, and 4, the myopathic form. As local treatment the author recommends an inhalation from a pint of hot water containing a teaspoonful of the following:

℞.	Menthol	gr. x		65
	Balsami peruviani	ʒss	2	
	Thymol	gr. i		06
	Tinct. eucalypti q. s. ad	℥ii	60	

M. Sig.: One teaspoonful floated on a pint of hot water as an inhalation.

Hot fomentations around the neck are very useful in the painful congestive forms.

Scarifications may be necessary in the markedly edematous forms, but usually the following combination as a spray will give relief:

℞.	Cocainæ muriatis	gr. ii-iiiss		12-.20
	Sol. adrenalin (1-1,000)	m. xl	2	65
	Antipyrin	ʒi	4	
	Glycerini			
	Aq. menth. pip., āā	ʒvi	24	
	Aquæ q. s. ad	℥vi	180	

M. Sig.: To be used as a spray three or four times a day.

Later in the course of the trouble, when the infiltration has disappeared, good results are obtained, according to the author, from the application of a silver nitrate solution or zinc chlorid 1/100 or 1/50, or it may be as strong as 1/30.

In cases of edema of the glottis in such conditions, or from the various other causes, J. C. Gittings states that intubation rarely affords relief unless the obstruction is infraglottic. Tracheotomy is demanded in extreme cases. The continuous inhalation of medicated steam is always to be employed; scarification and external depletion by leeches is recommended. Cold and heat should be used externally and internally—cold as a prophylactic and heat as a stimulant and absorbent. Stimulating and supportive treatment is necessary in such cases.

Medicolegal

Compulsory Physical Examination.

The Supreme Court of Montana says, in May vs. Northern Pacific Railway Co., that on the question of whether, in an *action for personal injuries, a court may compel the plaintiff* to submit to a physical examination by physicians and surgeons appointed by the court, the authorities are in hopeless conflict, and any attempt to reconcile them would be barren of results. The first reported case in which the power of the court to compel such examination is asserted is Walsh vs. Sayre, 52 How. Prac. 334, decided by the New York Superior Court in 1868. This was an action for damages for malpractice, and on the analogy to cases of mayhem, divorce on the ground of impotency, and cases of controversies between a widow claiming to be pregnant by the decedent, and other heirs of the estate, wherein such examinations had been ordered, it was held that a court of law could compel the plaintiff to submit to a physical examination. A leading case on the subject is Schroeder vs. Railway Co., 47 Iowa, 375, decided in 1877. Mention is not made of the New York case cited above. The opinion states that there were no precedents at the time of its rendition. The power of the trial court to compel the *plaintiff* to submit to such an examination is asserted.

After continuing the review showing the decisions of courts on the first presentation of this question to them, the Supreme Court of Montana says that the case of Walsh vs. Sayre was followed in Shaw vs. Van Rensselaer, 60 How. Prac., 143; but in 1891 the question came before the Court of Appeals of New York in McQuigan vs. Railway Co., 129 N. Y., 50, and Walsh vs. Sayre and Shaw vs. Van Rensselaer were overruled. The McQuigan case was followed in Cole vs. Fall Brook Coal Co., 159 N. Y., 59, decided in 1899. The Legislature of New York, however, circumvented the effect of these last decisions by enacting a statute directly conferring upon trial courts the power to make and enforce such an order. Then follows a further review of decisions, and the statement that if the last announcements of these several courts may be taken to indicate the law in their respective states, a review of the decisions discloses that the power of trial courts to compel such examinations is asserted in Alabama, Arkansas, Georgia, Iowa, Indiana, Kansas, Kentucky, Michigan, Minnesota, Missouri, North Dakota, Washington and Wisconsin, and denied in the federal courts, and in Illinois, Massachusetts and Texas, and was denied in New York until specifically granted by direct legislative enactment.

The bare assertion that trial courts possess this power, in the absence of any legislation, and without common law precedents, has led to the greatest possible confusion among the decisions of the very courts asserting it. (1) What is the source of the power? (2) To what extent may it be carried? (3) May the defendant demand the order as a matter of right? And (4) how will the court enforce obedience to its order?

1. Singularly enough, the first of these questions appears to have received little or no consideration. In some of the opinions it is said that the power is one inherent in the trial courts. In Graves vs. Battle Creek, 95 Mich. 266, decided in 1893, it is said, "It is true that the rule is one of modern growth." Most of the courts content themselves with the bare assertion of the power, without any discussion of its origin.

2. If the plaintiff may be compelled to submit to a physical examination, is the authority to order it an absolute or only a qualified one? May the plaintiff be compelled to submit to the administration to him of anesthetics or drugs by which he loses consciousness altogether, or, if the injury is an internal one, may he be compelled to submit to the use of such surgical instruments as the physicians appointed to make the examination may see fit to use? May he be compelled to exhibit the injury to the jury in open court, and, if the plaintiff be a woman, is there any protection whatever against violence to her feelings? By some of these courts it has been held that anesthetics and drugs should not be used (Schroeder vs. Railway Co., Strudgeon vs. Sand Beach, 107 Mich., 496), and that the plaintiff should not be compelled to submit to the use of surgical instruments (O'Brien vs. La Crosse, 99 Wis., 421); but in Railway Co. vs. Palmore, 68 Kan., 545, it was held that the plaintiff could be compelled to submit to the examination, and to an injection of a drug into his injured eye to dilate the pupil; and in Hall vs. Manson, 99 Iowa, 698, it was held that the plaintiff, a woman, could be compelled to remove her shoe and stocking, that an examination might be had and measurements taken of her injured ankle in the presence of the jury. In Railway Co. vs. Hill, 8 South., 90, the Supreme Court of Alabama said: "When it becomes a question of possible violence to the refined and delicate feelings of the plaintiff on the one hand, and possible injustice on the other, the law can not hesitate. Justice must be done." This is quoted with approval in Lane vs. Railway Co., 21 Wash., 119. However, in Graves vs. Battle Creek, it is said: "The decisions are not uniform on this question, but the great weight of authority is in favor of the exercise of such power by the court under proper restrictions; the rule recognizing, however, that a wide discretion is vested in the trial court, which justifies a refusal to require the examination . . . where the sense of delicacy of the plaintiff may be offended by the exhibition." To the same effect is the decision in Ottawa vs. Gilliland, 63 Kan., 165.

3. In Sibley vs. Smith, 46 Ark., 275, and in Railroad Co. vs. Thul, 29 Kan., 466, it is held that the defendant may demand the order as a matter of right, but that in granting it the court may exercise its discretion. This court (the Supreme Court of Montana) is unable to understand this contradiction of terms, and observes that in most of the cases it is held that the application is one addressed to the sound discretion of the trial court, subject to review for manifest abuse only.

4. In the Schroeder Case and in Sibley vs. Smith it is said that refusal of the plaintiff to comply with the order would constitute contempt of court, and subject the plaintiff to the punishment of a recusant witness; while in Turnpike Co. vs. Baily, 37 Ohio St., 104; Lane vs. Railway Co., Wanek vs. Winona, 78 Minn., 98; Brown vs. Railroad Co., 12 N. D., 61, and in the dissenting opinion in Railroad Co. vs. Botsford, 141 U. S., 250, it is said that it is not a question of contempt; that the court can not compel the plaintiff to comply with the order which it has made, but, if he refuses, the court may dismiss his action or refuse to permit him to testify.

From the assertion of the power arising from the apparent necessities of extraordinary cases, as disclosed by the decision in the Schroeder Case, we observe the almost limitless extent to which the power has been carried; and, not content with applying the rule to civil actions for personal injuries, it has been extended to apply to the prosecuting witness in a criminal case (King vs. State, 100 Ala., 85), and, for the same reasons advanced for the exercise of the power in civil action by the courts asserting its existence, the doctrine has been applied to a criminal case, and the defendant compelled to bare to the view of the jury part of the unexposed portions of his body on which were certain tattoo marks, in order to enable the state to complete the case against him, with the result that the defendant was convicted of a capital offense. State vs. Ah Chuey, 14 Nev., 79.

The only instances in which such power was invoked at common law were in actions for divorce upon the ground of impotency, appeals of mayhem, cases of atrocious battery, cases of conviction of a woman of a capital crime who is alleged to be pregnant, and controversies between heirs and a widow claiming to be pregnant by the deceased. No one of these rules has ever obtained in this country, unless it has been in cases of divorce on the ground of impotency. The power was exercised by the English ecclesiastical courts, and was a graft from the civil law.

The reasons advanced by the courts for the exercise of this power, in the absence of any direct authority, the Supreme Court of Montana goes on to say, do not commend themselves to it. It says that it is said by some that the power is analogous to the proceeding for discovery; but discovery was not compelled by the law courts at common law. By other courts it is said that the assertion of this power is necessary to prevent the plaintiff from maligning and bolstering up a fictitious case "by the very unreliable speculations of so-called medical experts." Wanek vs. Winona, above cited. It is a curious process of reasoning which enables a court to characterize the solemn testimony of medical men as unreliable speculations when the witnesses are called by the plaintiff, but if these same physicians be called by the court, on application of the defendant, they immediately become the instrumentalities through which, not approximate, but exact, justice is to be done. Others, including the dissenting opinion in the Botsford Case, say it is strange that the plaintiff may, if he chooses, exhibit his injury to the jury, or may testify concerning it, or may have other witnesses do so, but he can not be compelled to make such exhibition. This court is of the opinion that even if the plaintiff might, as a matter of right, exhibit his injuries to the jury, it would not add to the argument in behalf of that view of the case. In this state (Montana), however, he does not possess that right. He may offer to do so, but it is within the discretion of the court to permit or refuse the offer, subject, of course, to review for a manifest abuse of that discretion.

The right to the inviolability of one's person is merely a privilege which the plaintiff may waive, as a defendant may the constitutional guaranty that in a criminal case he can not be compelled to be a witness against himself. As a defendant may give evidence against himself, but can not be compelled to do so unless he waives the privilege, so the plaintiff may exhibit portions of the clothed parts of his body to the jury, if the court permits, but can not be compelled to do so. The constitutional guaranty is not more solemn and binding in one instance than in the other. And, for the much stronger reason, the plaintiff can not be compelled to make such exhibition of himself to third parties, strangers to the case, in order that they may procure material for testimony.

Current Medical Literature

AMERICAN.

American Medicine, Philadelphia.

August 19.

1 *Matas Operation for the Cure of Aneurism. J. H. Gibbon, Philadelphia.
2 *Treatment of Chancre and Chancroid. D. E. Wheeler, Buffalo.
3 Elimination of Endogenous Uric Acid in a Case of Chronic Gout. A. T. Laird, Albany, N. Y.
4 *Antituberculosis Work in the United States Army, Navy and Marine-Hospital Services. G. H. Kress, Los Angeles.
5 *Treatment of Infected Otitis Media. J. G. Huizinga, Grand Rapids, Mich.
6 *Enterotoxismus as a Substitute for Autointoxication. H. A. Houghton, New York.

1. **Matas Operation for Cure of Aneurism.**—Gibbon describes the operation and reports one case, that of a negro aged 31, who suffered from a large popliteal aneurism. The sac was laid open and the arterial openings sutured. The sac was then obliterated by repeated rows of plicating sutures. The wound was closed without drainage. Suppuration took place, but the patient made a complete recovery after superficial drainage was established. Some months after the operation there was no evidence of a recurrence.

2. **Treatment of Chancre and Chancroid.**—Wheeler classifies venereal ulcer into: 1. Simple uncomplicated ulcer, treatment consisting of frequent irrigation and wet dressings. 2. Ulcer complicated by phimosis. If attempts at reducing the phimosis fail, lateral incisions and secondary circumcision should be done; primary circumcision is contraindicated. 3. Ulcer complicated by paraphimosis. If seen early, immediate reduction is imperative; if not seen until sloughing has relieved the strangulation, expectant treatment should be instituted. 4. Phagadenic ulcer. Irrigation should be done every two hours, day and night, and iodoform used. Escharotics are positively contraindicated.

4. **Antituberculosis Work in U. S. Army, Navy and Marine-Hospital Service.**—Kress discusses the antituberculosis work carried on by the medical branches of the three public services. According to the 1900 census the mortality rate from tuberculosis for the registration area of the United States was 187.3 per 10,000 population. In the army, with a total strength of 67,643 in 1904, the mortality rate was 37 per 100,000 whites; 314 per 100,000 negroes; 84 per 100,000 Filipinos; for soldiers of the three races together it was 53 per 100,000—for all races being hardly more than one-fourth as great as in civil life. In the navy, with a total strength of 37,248, there was an increase in 1904 of 104 cases over the figures of 1903. The Marine-Hospital Service cared for 933 tuberculous seamen in hospitals and treated 306 in dispensaries.

5. **Treatment of Chronic Suppurative Otitis Media.**—Huizinga says that this condition can not be cured unless the entire auditory tract can be made surgically clean by forcing the antiseptic fluids through from end to end of the entire tract. It is necessary to have a large opening in the drum and a thoroughly dilated condition of the Eustachian tube, both for the purpose of drainage and of efficient cleansing. It is important to have a continuous current of antiseptic vapor passed through a Eustachian catheter into the Eustachian tube, both for cleansing and dilating purposes. This is best accomplished by connecting a vaporizer containing iodin, menthol and creosote in oil, with a large air tank, having the air compressed up to thirty pounds. The valves are opened and a continuous current of antiseptic air is forced through the catheter and into the Eustachian tube until the pressure goes down to twenty pounds; this requires several minutes. By this method thorough and complete dilation and the cleansing and disinfection from the use of the antiseptic solution are accomplished and the danger of driving infected material that may be present in the Eustachian tube into the deeper parts of the middle ear is avoided. It is necessary to treat the parts sufficiently often to maintain as nearly as possible a condition of antisepsis. No treatment can be considered thorough that does not recognize the relation existing between pathologic conditions in the nose and nasopharynx and the ear.

6. **Enterotoxismus.**—Because the word autointoxication as now used has many different meanings leading to considerable confusion and inaccuracy, Houghton suggests that the autointoxication of enteric origin be designated as enterotoxismus, and gives the following definition: A morbid condition characterized by the absorption of substances from the gastrointestinal tract which are toxic by virtue of their quantity or quality and which are produced therein by the disintegration of foodstuffs through the perverted and prolonged action of enzymes or the activity of entophytes. Classifications are given.

Medical Record, New York.

August 19.

7 *Operations for Procidentia Uteri. W. M. Polk, New York.
8 *Study of the Blood in Relation to Therapeutics. E. Castelli, New York.
9 *Practical Points in Pedriatrics for the General Practitioner. T. W. Kilmer, New York.
10 *Deaf-Mutism and Ptomain Poisoning. W. S. Bryant, New York.
11 Further Notes on the Toxemia of Pregnancy. W. S. Stone, New York.
12 Henry G. Davis, M.D. A Review of Some of His Work. J. J. Nutt, New York.
13 *Method for the Sterilization of Sea-Tangle Tents. O. L. Mulot, Brooklyn, N. Y.

7. **Operations for Procidentia Uteri.**—Polk proposes two methods of dealing with this condition. The first is applicable to partial prolapse when retention of the uterus is desired, and has as its purpose the reduction in size and weight of the uterus, and its removal from the posterior and lower parts of the pelvic cavity to the more advantageous position in the anterior and upper parts of this region. This is accomplished by high amputation of the cervix, followed by Alexander's operation and perineal repair. The second procedure is applicable to complete prolapse, and consists in removal of the uterus, and attachment of the vaginal stump to the anterior abdominal wall. The details of this operation are described and illustrated. The author has performed it in 10 cases with excellent results. Perineal repair is essential in this instance also, but the method chosen must not shorten the vagina too much, or there will not be slack enough left to permit the stump to reach the abdominal wall when the laparotomy is done. Vaginal hysterectomy is considered too radical for partial prolapse, and not sufficiently so for complete, and the plan of reefing the uterosacral ligaments is also deprecated.

8. **Blood in Relation to Therapeutics.**—Castelli expresses the view that the "future of medicine belongs to hematology," and that hypodermic and intravenous medication must finally replace internal treatment. The blood and lymph, he states, are the bearers and transmitters of any infectious element, and the localization of the infectious element in a special organ or region of the body, is a simple process of metastasis. The microbes, or toxins, are transported by the blood vessels into such regions of the body as offer conditions most suitable for the accomplishment of their reactive processes, just as in a similar manner cancer cells are transported to those parts of the body wherein may be reproduced the malignant growths from which they themselves originated. If the therapeutic agent should follow the same route as that followed by the infective element, its action, general and local, would take effect at such points as presented a necessity for its action.

9. **Practical Points in Pediatrics.**—In dealing with children it is essential, says Kilmer, to gain their respect, confidence and obedience, and to do this tact is required. Children should not be deceived by being told that something is not going to hurt them when it is, for in this way their confidence is irremediably lost. In examining an infant or young child it should always be undressed, and if asleep, it should be studied a while before being roused. A child's chest can not be aus-

culated without the use of a stethoscope, because the average adult ear would cover almost an entire lung of an infant. Sputum is obtained from babies by introducing a catheter, 21 F., into the esophagus, as the act of gagging forces the sputum which is in the esophagus into or on the catheter. The landmarks on an infant's chest are quite different from those of an adult's, and it is impossible to locate the apex beat without the use of the stethoscope. The throat and ears should always be examined when called to a sick baby. Adenoids should never be operated on without an anesthetic, for the nervous shock more than counterbalances the risk of the anesthetic. A simple and practical system of milk modification that can easily be remembered is described, and a blank report is reproduced on which the mother is supposed to record the infant's progress.

10. **Deaf-Mutism and Ptomain Poisoning.**—Bryant describes two cases in which difficulty in walking, deafness, and disorders of speech were apparently produced by food poisoning.

13. **Sterilization of Sea Tangle Tents.**—Mulot advises soaking sea tangle tents for seventy-two hours in tincture of iodin and then immersing them in 95 per cent. alcohol, to remove the surplus iodin. Another method is to boil the tents and then dry them in sterile tubes for a few days in an oven or hot-air chamber, which will cause them to shrink to their original size. Or the two methods may be combined, first boiling and shrinking them, and then soaking in iodin. These tents furnish the most desirable means of dilating the cervix in some cases, and when prepared in this way their use is free from danger.

Medical News, New York.

August 19.

14 Sphygmograms from Two Cases of Bradycardia. G. Dock, Ann Arbor, Mich.
15 *Impossibility of Differentiating So-Called Paratyphoid from Typhoid Except by Bacteriologic Examination of the Blood. W. Coleman, New York.
16 *Experiments with Radium Emanations. W. C. Phillips, New York.
17 Suprapubic Prostatectomy. A. I. McKinnon, Lincoln, Neb.
18 *Prevention and Treatment of Puerperal Sepsis. L. C. Fischer, Atlanta, Ga.
19 Plea for Surgical Intervention in Suspected Malignant Disease of the Abdominal Cavity. B. B. Davis, Omaha, Neb.
20 Insane of Canada: Presidential Address. T. J. W. Burgess, Montreal, Canada.

15. **Difficulty of Differentiating Paratyphoid from Typhoid.**—According to Coleman, paratyphoid infections can not be distinguished from typhoid, except by the recovery from the blood of the bacillus concerned and its proper identification. He considers the term paratyphoid not only unnecessary but misleading, and suggests the advisability of considering typhoid clinically as a disease which may be caused by several members of the typhoid-colon group of bacilli.

16. **Radium Emanations.**—Phillips carried out some therapeutic experiments on seven patients with diseases of the ear, nose and throat with a properly constructed tube, the interior of which was coated with radium so that the emanations could be made use of in treatment. The method was found to be useless.

18. **Treatment of Puerperal Sepsis.**—Fischer states that the woman should receive proper care and attention before the birth of the child and that her bed should be properly prepared. Especial care should be paid to the physician's hands. The placenta and membranes should be carefully examined. The perineum should be examined for tears, and if these have occurred they should be repaired at once. As soon as there is a rise of temperature treatment should be started. Fischer emphasizes the importance of making careful digital examinations and advocates the use of a dull irrigating curette when the temperature is not reduced by douches. He calls attention to the value of normal salt solution in diluting the toxins and in aiding absorption. He prefers tube to gauze drainage in these cases, and avoids the use of gauze after the curettement. He also states that it is important to open and to drain abscesses in the pelvis as soon as they form.

Boston Medical and Surgical Journal.

August 17.

21 Problems of Intermediary Metabolism. R. H. Chittenden, New Haven, Conn.
22 *Case of Lymphatic Leukemia in a Child. J. L. Morse and H. C. Low, Boston.
23 Further Contribution to the Study of Bacilluria in Typhoid and Its Treatment with Hexamethylenamin. C. D. Easton, Boston.

22. **Lymphatic Leukemia in a Child.**—Morse's case, in a girl 3½ years old, is of interest in that it afforded an opportunity to study the development of the changes in the blood and lymph nodes during a considerable period, and that, although it was most carefully studied, the correct diagnosis could not be made until a comparatively short time before death. It shows that the character of the changes in the blood may not develop to a degree sufficient to justify a positive diagnosis for many months. It also shows that the changes in the lymph nodes may be, not only at first, but even for a considerable time, materially different from those which are usually considered to be typical of this disease. It is noteworthy that the characteristic changes in the blood and lymph nodes appeared at essentially the same time. According to Morse, the only inference that can be made from the histologic study of the tissues at different stages of the disease is that lymphatic leukemia may have its origin in a malignant growth affecting the lymphoid tissues more or less generally, and that until there is a secondary proliferation of the lymphoid cells we do not get the typical tissue picture and blood condition which is characteristic of lymphatic leukemia. It suggests that leukemia, pseudoleukemia and malignant lymphoma can not be separated as three distinct entities, and that they do not always differ characteristically in the histologic structure of their lymphoid tissues; and that the microscopic sections in these cases often will be wrongly judged in the absence of complete clinical data as regards the distribution of the process and the examination of the blood.

New York Medical Journal.

August 19.

24 The Epiphyses of the Long Bones and Their Bearings on the Operation of Resection. J. Knott, Dublin, Ireland.
25 *Use and Abuse of the Stomach Tube. E. Palier, New York.
26 *Employment of Dry Cups in Herpes Zoster. M. Leale, New York.
27 Tropical Diseases of the Angola Highlands. F. C. Wellman, Benguella, West Africa.
28 Element of Truth in Mental Healing. L. Waite, Chicago.
29 Six Lectures on Diseases of the Blood. J. M. Swan, Philadelphia.
30 *New Method of Extracting the Internal Saphenous and Similar Veins in Varicose Conditions; Preliminary Report. W. L. Kellar, San Francisco.

25. **Use of Stomach Tube.**—Whenever possible Palier uses three vessels for obtaining the gastric contents for examination. The first few cubic centimeters he collects in one vessel; then enough for examination in a second vessel, and the remainder in a third vessel. The second vessel usually contains the fluid of the highest acidity. He seldom aspirates to obtain the gastric contents, but slips a rubber tube on the distal end of a short glass tube, the proximal end of which is inserted into a Ewald stomach tube, and by lowering the distal end the stomach contents come out by the siphon principle, especially when some pressure is used on the stomach. He believes that the stomach tube is not used sufficiently for diagnostic purposes, and cites several cases to show the utter impossibility of correctly diagnosticating and treating gastric diseases without the aid of this valuable instrument. The contraindications of introducing the stomach tube are really very few. When it is carefully and properly done, a soft rubber tube can do no harm. The classical contraindications are hematemesis, aneurism of the aorta and advanced pregnancy. Cardiac affections differ so widely in numerous respects that each case must be judged on its individual merits. In hemorrhage from the stomach, this instrument may do harm by aggravating the bleeding. In pregnancy each case should be judged on its own merits. As to aortic aneurism, while the introduction of a soft rubber tube is not likely to rupture the aneurism, yet this is liable to rupture any moment under excitement, and it is best, therefore, not to attempt the use of the tube. When the stomach can not empty itself, when there is alimentary stasis, when drainage is necessary, and when there is much mucus in the stomach, the stomach tube should be used.

26. **Dry Cups in Herpes Zoster.**—Leale emphasizes the fact that the careful and scientific application of dry cups has proved of great value in his hands in the treatment of herpes zoster, both in shortening the duration of the disease and in

ameliorating the symptoms. The dry cup should be applied over the *ganglia of the posterior roots and over the points of emergence* of the nerves involved. This is done just to the affected side of the spinous processes of vertebræ over the area determined, several cups being applied and allowed to remain long enough to insure their maximum suction power. After the first set is removed they can be reapplied if deemed necessary. Then a few cups are applied to the location of the *emergence and over the course of the nerve or nerves involved.* In this we are guided by the seat of the pain and hyperesthesia and by the location of the eruption. Leale makes it a practice to cup early in the disease, in many cases before the eruption has appeared, when, of course, it is difficult or impossible to distinguish it from a simple neuralgia. He usually finds it best to repeat the cupping once every twenty-four hours, and preferably just before the patient settles down for his night's sleep. In this way a nocturnal paroxysm of pain can often be prevented, and a good night's rest secured, which otherwise would have been impossible.

30. **New Method of Extirpating Varicose Veins.**—The operation described by Kellar should be employed to extirpate such varicose veins as have few branches, *without mutilating the patient by a continuous scar along the course of the vessel to be removed.* The vessel is exposed by a short incision near the femoral opening of the fascia lata (if the internal saphenous), is dissected free from its sheath for about one inch, and is then ligated as high up as possible. The lower end of the vein is exposed and treated in a similar manner. The vein is now cut below the proximal end and above the distal end, thus leaving the section to be removed free and ready for removal. The upper end of the section to be removed is split for about three-quarters of an inch on its anterior wall. A strong ligature is then tied to the upper end of the vein, care being taken not to include more tissue in the ligature *than will pass through the lumen of the vessel.* A wire loop or probe is then passed through the lumen of the vessel from the lower opening, and the ligature is threaded through the eye of the loop or probe, the probe is withdrawn and the ligature brought out on the surface at the point where the probe entered. Gentle traction is now made on the ligature, the edges of the vein being inverted into its own lumen by an assistant. Traction is continued until the vein is completely extirpated by being turned inside out and withdrawn from its sheath. When the internal saphenous vein is being removed a slight puckering is seen about midway between the incisions, indicating that the posterior branch of the vessel has been reached, and the latter, with another small branch often present at that point, can be ligated and incised through a small incision. After separating these branches, traction is again employed and the remainder of the vein removed. In the first patient operated on by the author only about three inches of the vein were removed, but in the second five inches were extirpated without difficulty.

Lancet-Clinic, Cincinnati.

August 19.

31 *Maternal Diet with the Object of Lessening the Bony Development of the Fetus. W. Gillespie, Cincinnati.
32 *President's Address, Mississippi Valley Medical Association. E. Walker, Evansville, Ind.
33 *Prevention of Heart Disease. R. H. Babcock, Chicago.

31. **Maternal Diet and Fetal Development.**—Gillespie discusses *the possibility of influencing the bony growth of the fetus* by regulating the diet of the mother. He believes that this is not only impossible but dangerous, inasmuch as the demands of the fetus must be met by the mother even to the extreme of decalcifying her own osseous system. Furthermore, even if it were possible to bring about such a result, it would probably increase the difficulties of labor rather than diminish them, because the lack of any bony development may prove a serious obstacle to labor. Under normal conditions the spinal column of the fetus possesses sufficient rigidity to act as a good transmitter of force. Its rigidity is greatly increased by the splint-like action of the arms and legs, folded as they are on *the anterior surface of the child.* If we could, by diet, lessen the rigidity of the fetal skeleton, it would in like proportion lessen its ability to transmit force and the result is a difficult labor.

32.—See article in The Journal, Feb. 6, 1904, page 347.

33.—See abstract in The Journal, Oct. 24, 1903, page 1040.

Annals of Surgery, Philadelphia.

August.

34 *Final Results in the X-Ray Treatment of Cancer, Including Sarcoma. W. B. Coley, New York.
35 *Scopolamin-Morphin as an Adjuvant in the Administration of General Anesthesia. G. Seelig, St. Louis.
36 *Scopolamin-Morphin Anesthesia. E. Ries, Chicago.
37 Hypertrophic Pyloric Stenosis in the Infant. J. M. Robertson, Glasgow, Scotland.
38 Combined Volvulus and Hernia Through a Recent Mesenteric Slit. H. C. Curl, U. S. N.
39 *Cure of Femoral Hernia. W. B. De Garmo, New York.
40 Punctured Wounds of the Bladder. E. Evans, La Crosse, Wis., and H. A. Fowler, Washington, D. C.
41 Dislocation Forward of the Atlas, with Fracture of the Odontoid Process of the Axis. J. A. Kelly, New York.
42 *New Interdental Splint for Fractures of the Lower Jaw. R. Russ, San Francisco.
43 *Treatment of Fractures of the Femur in Infancy and Childhood. M. W. Ware, New York.
44 Fracture of the Carpal Scaphoid. L. W. Ely, New York.
45 Transmesenteric Hernia of the Appendix Vermiformis. A. C. Wood, Philadelphia.

34. **X-Ray Treatment of Cancer and Sarcoma.**—After having given the *x-ray a very careful trial in 68 cases of sarcoma* in almost every locality, Coley concludes that, while in certain rare cases, especially of sarcoma originating in the lymphatic glands, improvement may be very striking, going so far, in some cases, as to cause entire disappearance, there is almost always a speedy recurrence, either local or metastatic, and *that the influence of the x-rays on sarcoma is rarely, if ever, curative.* The *x*-ray exerts a powerful influence on cancer cells of all varieties, but most marked in cases of cutaneous cancer. In some cases, chiefly in superficial epithelioma, the entire tumor may disappear, probably by reason of fatty degeneration of the tumor cells with subsequent absorption. In a much smaller number of cases of deep-seated tumors, chiefly cancer of the breast and glandular sarcoma, the tumors have disappeared under prolonged *x*-ray treatment. In nearly every one of these cases, however, that has been carefully traced to final result, there has been a local or general return of the disease within from a few months to two years. *In view of this practically constant tendency to early recurrence,* furthermore, in the absence of any reported cases well beyond three years, the method should never be used except in inoperable cases, or as a prophylactic after operation, as a possible, though not yet proven, means of avoiding recurrence. The use of the *x*-ray as a preoperative measure in other than cutaneous cancer is contraindicated (1) because the agent has not yet been proven to be curative, (2) because of serious risks of an extension of the disease to inaccessible glands or to other regions by metastases during the period required for a trial of the *x*-ray.

35. **Scopolamin-Morphin Anesthesia.**—Seelig presents a series of 65 general anesthesia administrations, including abdominal and vaginal hysterectomies, operations for hernia, hemorrhoids, anal fistula, plastic operations, curettements, uterine fixations, appendicectomy, nephropexy, thyroidectomy, craniectomy, orchidectomy, etc. In every instance the patient received a hypodermic injection of scopolamin hydrobromate, grain 1/100, and morphin, grain 1/6, one-half hour before the *administration of the geenral anesthetic.* General anesthesia was induced by means of the ethyl chlorid-ether sequence administered through the Bennett inhaler, specially modified for this purpose. Seventy-seven per cent. of the patients did not vomit at all. One-third of the patients who did vomit vomited only once, and then only *from two drams to one* ounce of pure mucus. Nausea was never pronounced, except in two cases, and vomiting never occurred earlier than two hours after operation. Seeling expresses himself as thoroughly satisfied with the method.

36. **Id.**—Ries has used scopolamin morphin on 72 patients in 92 operations, with good result.

39. **Cure of Femoral Hernia.**—The cases reported by De Garmo were met with in operating in a series of 1,250 abdominal hernias. The 110 femoral hernias were in 99 patients, 83 females and 16 males. Eighty-eight patients had single and 11 had double femoral hernia. The ages of the patients ranged

between 8 and 81, the greatest number of these cases occurring between the ages of 30 and 40. In 28 patients strangulation existed at the time of the operation, and 82 patients were operated on for the cure of the hernia. Only one death occurred, that of a woman aged 70, who had a strangulated hernia and an intestinal perforation. The intestine was fastened in the wound and freely opened. The patient died of exhaustion twenty-four hours later. There was only one actual recurrence, eight months after operation, in a woman of 75. The technic of the operation employed by De Garmo is as follows: The incision should be between two and three inches long, parallel with and to the inner side of the femoral vessels. The upper angle of the wound should be well up over Poupart's ligament and extend down over the saphenous opening. When the skin and the superficial fascia are incised, usually the sac and its subperitoneal fat will come into the wound with the appearance of an encysted lipoma and, before separating the sac, it is best that this entire mass should be lifted out of its bed by thumb forceps and blunt dissection, so that its neck where it passes under Poupart's ligament shall be entirely free from its surrounding. By traction on the sac and its superimposed fat this neck may not only be freed, but it will be materially lengthened, so that when it is finally ligated and cut off it will retract within the abdominal cavity, leaving the femoral canal free of foreign tissue. This is absolutely essential to a subsequent permanent cure. The sac should be opened, and where the omentum is found adherent it should be carefully ligated, cut away, and its stump reduced to the abdominal cavity. Adherent intestine will rarely be found, but when it is the adhesions must either be broken up or, if too firm, the adherent part may be cut out of the sac and left attached to the bowel. When in doubt the latter method is by far the safer. Adherent omentum is frequently found and should be cut away after careful ligation. The sac having been entirely freed of its contents, is tied off as high as possible, while it is being forcibly drawn down by an assistant. Great care must be used to insure the perfect freedom of the neck of the sac from protruding bowel or omentum while the ligature is being placed. After tying with strong catgut (a double strand of No. 2 plain is preferred), pass the needle, which has been previously threaded with it, through the neck of the sac and tie again. This gives a double ligature anchored by perforation between the two, and prevents slipping off. When the sac is cut away the stump should be examined to be sure that no bleeding vessels remain, and not until then should the ends of the ligature be cut. When the ligature is cut the stump usually retracts within the abdomen. If this is prevented by connective tissue which has not been broken it should be carefully pushed back, leaving the femoral opening absolutely free. This opening is closed by good-sized kangaroo tendon threaded in a strong, blunt needle by pressing the end of the finger firmly into the femoral opening under Poupart's ligament, and passing the needle through the ligament on the finger-point. This perforation should be well toward the outer side of the canal and close to the femoral vein. The operator should assure himself, by pressure of the finger against the ramus of the pubes, that the vessels are out of the way, and pass the point of the needle fully down to the periosteum of the pubic bone, taking up all tissues over it. This constitutes the first stitch, but should not be tied until the others are in place. Others should then be placed in the same manner, every quarter of an inch apart, until near the spine of the pubes. Usually three or four will completely close the femoral opening. When tied down and the ends cut moderately close, the fascia should be closed in by plain catgut, to avoid a pocket in the tissues that otherwise may result, and the skin may then be closed by buried sutures of plain catgut. The wound is covered by collodion and a compress of sterilized gauze, held in place by a figure-of-eight bandage. In ten days the dressings are changed and a bandage for temporary support is applied. If healing has been complete, the patient is allowed to sit up on the tenth day and to leave the house on the fourteenth day after the operation. The bandage used after the first dressing consists of a pelvic belt, of three thicknesses of canton flannel, with a compress of gauze over the former site of the hernia, and a perineal strap to prevent its slipping up. This is to be worn for four weeks. No truss or other permanent support should be worn.

42. **New Interdental Splint.**—The splint devised by Russ is made of spring brass 3/64 of an inch in thickness. Each clamp consists of two parts, a chin-piece and a piece bent at right angles, making a long and a short arm. The chin-piece is wider at one end to prevent its slipping when incorporated into the plaster-of-Paris dressing. It is 8 cm. long and provided with a number of holes so that the plaster-of-Paris may sink into them, thus making the dressing more secure. The right-angled piece is 1 cm. wide, while the arms measure 7½ cm. and 5 cm. respectively. The end of the short arm is provided with a simple lock which fits into a corresponding lock in the chin-piece. Three or four holes should be bored into the long arm. When these two parts are locked they form a clamp which permits of easy adjustment. This adjustment is accomplished by means of a round head brass machine-screw 6 cm. in length and carrying a winged nut. This fits into holes in the long arm and the chin-piece at 1½ cm. distance from the short arm. After the clamp has been made, it should be heavily nickel plated. The clamp has been found to be applicable to thirty-five out of fifty adult jaws. For the other cases, a splint with a short arm of 5½ cm. answers. The splint is applied with the patient lying in the dorsal position on the operating table. The face is shaven clean and the fractures reduced. A thin layer of felt or layers of sheet wadding are then fitted neatly over the chin and under the jaw, extending as far back as the rami. Over this the plaster-of-Paris bandage is carefully folded, the operator rubbing the plaster well as he proceeds. The bandage is carried back on each side to the ramus, where the turns are held by an assistant or by a patient. When the jaw is well covered the splints are applied, the parts being held together by the screws and nuts. The long arms are placed directly over the molar and biscuspid teeth, extending as far back as the last molars and emerging at the corners of the mouth. The chin-pieces are pressed into the plaster. They should run along the body of the jaw. The apparatus being in position, a few more turns of the bandage are taken and the dressing completed by rubbing in dry plaster-of-Paris. Accurate coaptation is desired. When dry, the chin-pieces are detached from the interdental portions and the plaster-of-Paris dressing removed and trimmed to the desired shape. The dressing is then reapplied to the jaw. The interdental portions of the splints, together with some dental compound, such as is commonly used by dentists in taking impressions, are thrown into hot water. When sufficiently softened, the dental compound is applied along the under surface of the interdental arms, and these are quickly placed on the teeth, in the same position as in the first application, and pressed firmly down so that the splints rest on an even bed, the dental compound filling up the holes which have been bored into the long arms. The short arms are then locked to the chin-pieces, the screws reapplied, and the apparatus tightened by means of the winged nuts.

43. **Treatment of Fractures of Femur in Infants.**—A device is described by Ware which he has used with excellent results in forty cases up to the age of five years. The device consists of a right-angled isosceles triangle constructed of one strip of book-binder's pasteboard, the width of the triangle adapted to the width of the thigh. One length is obtained by measuring the trunk from the level of the lower angle of the scapula to the inguinal fold. The length of the other side of the right angle is the length of the thigh. The hypothenuse is always a few inches longer. The single strip of cardboard is then bent to the shape of the desired triangle and the overlapping edges secured by adhesive plaster. The triangle may be made more rigid by reinforcing it on all sides of this inner aspect with small pieces of cigar-box wood. The outer surfaces in contact with the trunk and thigh are to be padded with non-absorbent cotton. A muslin spica secures the triangle embracing the trunk and the thigh in a flexed position. Over the muslin bandage several turns of a dextrin bandage are placed, giving additional security to the splint. The leg is left to move freely.

ameliorating the symptoms. The dry cup should be applied over the ganglia of the posterior roots and over the points of emergence of the nerves involved. This is done just to the affected side of the spinous processes of vertebræ over the area determined, several cups being applied and allowed to remain long enough to insure their maximum suction power. After the first set is removed they can be reapplied if deemed necessary. Then a few cups are applied to the location of the emergence and over the course of the nerve or nerves involved. In this we are guided by the seat of the pain and hyperesthesia and by the location of the eruption. Leale makes it a practice to cup early in the disease, in many cases before the eruption has appeared, when, of course, it is difficult or impossible to distinguish it from a simple neuralgia. He usually finds it best to repeat the cupping once every twenty-four hours, and preferably just before the patient settles down for his night's sleep. In this way a nocturnal paroxysm of pain can often be prevented, and a good night's rest secured, which otherwise would have been impossible.

30. **New Method of Extirpating Varicose Veins.**—The operation described by Kellar should be employed to extirpate such varicose veins as have few branches, without mutilating the patient by a continuous scar along the course of the vessel to be removed. The vessel is exposed by a short incision near the femoral opening of the fascia lata (if the internal saphenous), is dissected free from its sheath for about one inch, and is then ligated as high up as possible. The lower end of the vein is exposed and treated in a similar manner. The vein is now cut below the proximal end and above the distal end, thus leaving the section to be removed free and ready for removal. The upper end of the section to be removed is split for about three-quarters of an inch on its anterior wall. A strong ligature is then tied to the upper end of the vein, care being taken not to include more tissue in the ligature than will pass through the lumen of the vessel. A wire loop or probe is then passed through the lumen of the vessel from the lower opening, and the ligature is threaded through the eye of the loop or probe, the probe is withdrawn and the ligature brought out on the surface at the point where the probe entered. Gentle traction is now made on the ligature, the edges of the vein being inverted into its own lumen by an assistant. Traction is continued until the vein is completely extirpated by being turned inside out and withdrawn from its sheath. When the internal saphenous vein is being removed a slight puckering is seen about midway between the incisions, indicating that the posterior branch of the vessel has been reached, and the latter, with another small branch often present at that point, can be ligated and incised through a small incision. After separating these branches, traction is again employed and the remainder of the vein removed. In the first patient operated on by the author only about three inches of the vein were removed, but in the second five inches were extirpated without difficulty.

Lancet-Clinic, Cincinnati.

August 19.

31 *Maternal Diet with the Object of Lessening the Bony Development of the Fetus. W. Gillespie, Cincinnati.
32 *President's Address, Mississippi Valley Medical Association. E. Walker, Evansville, Ind.
33 *Prevention of Heart Disease. R. H. Babcock, Chicago.

31. **Maternal Diet and Fetal Development.**—Gillespie discusses the possibility of influencing the bony growth of the fetus by regulating the diet of the mother. He believes that this is not only impossible but dangerous, inasmuch as the demands of the fetus must be met by the mother even to the extreme of decalcifying her own osseous system. Furthermore, even if it were possible to bring about such a result, it would probably increase the difficulties of labor rather than diminish them, because the lack of any bony development may prove a serious obstacle to labor. Under normal conditions the spinal column of the fetus possesses sufficient rigidity to act as a good transmitter of force. Its rigidity is greatly increased by the splint-like action of the arms and legs, folded as they are on the anterior surface of the child. If we could, by diet, lessen the rigidity of the fetal skeleton, it would in like proportion lessen its ability to transmit force and the result is a difficult labor.

32.—See article in The Journal, Feb. 6, 1904, page 347.

33.—See abstract in The Journal, Oct. 24, 1903, page 1040.

Annals of Surgery, Philadelphia.

August.

34 *Final Results in the X-Ray Treatment of Cancer, Including Sarcoma. W. B. Coley, New York.
35 *Scopolamin-Morphin as an Adjuvant in the Administration of General Anesthesia. G. Seelig, St. Louis.
36 *Scopolamin-Morphin Anesthesia. E. Ries, Chicago.
37 Hypertrophic Pyloric Stenosis in the Infant. J. M. Robertson, Glasgow, Scotland.
38 Combined Volvulus and Hernia Through a Recent Mesenteric Slit. H. C. Curl, U. S. N.
39 *Cure of Femoral Hernia. W. B. De Garmo, New York.
40 Punctured Wounds of the Bladder. E. Evans, La Crosse, Wis., and H. A. Fowler, Washington, D. C.
41 Dislocation Forward of the Atlas, with Fracture of the Odontoid Process of the Axis. J. A. Kelly, New York.
42 *New Interdental Splint for Fractures of the Lower Jaw. R. Russ, San Francisco.
43 *Treatment of Fractures of the Femur in Infancy and Childhood. M. W. Ware, New York.
44 Fracture of the Carpal Scaphoid. L. W. Ely, New York.
45 Transmesenteric Hernia of the Appendix Vermiformis. A. C. Wood, Philadelphia.

34. **X-Ray Treatment of Cancer and Sarcoma.**—After having given the *x*-ray a very careful trial in 68 cases of sarcoma in almost every locality, Coley concludes that, while in certain rare cases, especially of sarcoma originating in the lymphatic glands, improvement may be very striking, going so far, in some cases, as to cause entire disappearance, there is almost always a speedy recurrence, either local or metastatic, and that the influence of the *x*-rays on sarcoma is rarely, if ever, curative. The *x*-ray exerts a powerful influence on cancer cells of all varieties, but most marked in cases of cutaneous cancer. In some cases, chiefly in superficial epithelioma, the entire tumor may disappear, probably by reason of fatty degeneration of the tumor cells with subsequent absorption. In a much smaller number of cases of deep-seated tumors, chiefly cancer of the breast and glandular sarcoma, the tumors have disappeared under prolonged *x*-ray treatment. In nearly every one of these cases, however, that has been carefully traced to final result, there has been a local or general return of the disease within from a few months to two years. In view of this practically constant tendency to early recurrence, furthermore, in the absence of any reported cases well beyond three years, the method should never be used except in inoperable cases, or as a prophylactic after operation, as a possible, though not yet proven, means of avoiding recurrence. The use of the *x*-ray as a preoperative measure in other than cutaneous cancer is contraindicated (1) because the agent has not yet been proven to be curative, (2) because of serious risks of an extension of the disease to inaccessible glands or to other regions by metastases during the period required for a trial of the *x*-ray.

35. **Scopolamin-Morphin Anesthesia.**—Seelig presents a series of 65 general anesthesia administrations, including abdominal and vaginal hysterectomies, operations for hernia, hemorrhoids, anal fistula, plastic operations, curettements, uterine fixations, appendicectomy, nephropexy, thyroidectomy, craniectomy, orchidectomy, etc. In every instance the patient received a hypodermic injection of scopolamin hydrobromate, grain 1/100, and morphin, grain 1/6, one-half hour before the administration of the geenral anesthetic. General anesthesia was induced by means of the ethyl chlorid-ether sequence administered through the Bennett inhaler, specially modified for this purpose. Seventy-seven per cent. of the patients did not vomit at all. One-third of the patients who did vomit vomited only once, and then only from two drams to one ounce of pure mucus. Nausea was never pronounced, except in two cases, and vomiting never occurred earlier than two hours after operation. Seeling expresses himself as thoroughly satisfied with the method.

36. **Id.**—Ries has used scopolamin morphin on 72 patients in 92 operations, with good result.

39. **Cure of Femoral Hernia.**—The cases reported by De Garmo were met with in operating in a series of 1,250 abdominal hernias. The 110 femoral hernias were in 99 patients, 83 females and 16 males. Eighty-eight patients had single and 11 had double femoral hernia. The ages of the patients ranged

most improved methods of investigation. The great and progressive reduction of mortality is attributable to diagnostic improvement. Marked differences in mortality between different operators may be explainable by the failure to employ the latest diagnostic resources. Chetwood says that what the compass, the sextant, and the chart are in governing the route of the navigator, so are the microscope, the cystoscope and the *x*-ray in directing the course of the surgeon through the obscure realm of kidney surgery.

Annals of Otology, Rhinology and Laryngology, St. Louis, Mo.

June.

58 Deflections of the Nasal Septum: Critical Review of the Methods of Their Correction by the Window Resection. O. T. Freer, Chicago.
59 The Nose and Its Accessory Sinuses in the American Bear. J. M Ingersoll, Cleveland, Ohio.
60 Stricture of the Eustachian Tube in Aural Diseases, and Its Treatment. W. S. Bryant, New York.
61 Collodion Its Use When the Membrana Tympani and Malleal Ligaments are Relaxed. W. S. Bryant, New York.
62 The Cause and Treatment of Hay Fever. W. Dunbar, Hamburg.
63 Serum Treatment of Hay Fever. H. W. Lord, St. Louis.
64 Otitis Media Mucosa. J. E. Sheppard, Brooklyn.
65 Otogenous Infectious Thrombophlebitis Without Fever. G.
66 * of the Nasal Septum. G. Kil-
67 * Nasal Septum, New Technic with the Author's Swivel Knife, Reducing the Average Time of the Operation Several Minutes. W. L. Ballenger, Chicago.

66. **Submucous Window Resection of Nasal Septum.**—Killian describes, in detail, the operation devised by him and first reported in 1899. Two hundred and twenty patients have been operated on by Killian and his assistants according to this method. The submucous resection of the septum can be both temporarily and permanently contraindicated. The latter applies to people of advanced age, unless there are important reasons for interference. Small children are also not good subjects for such an operation as their nasal proportions are small and the narcosis is not so satisfactory. From 12 years on, however, the operation generally can be performed. Various chronic constitutional diseases are contraindications to operation. In pulmonary tuberculosis, one should operate only during the early stages, and then only on well-nourished patients with a good prospect of a standstill or healing of their disease. Killian never operates on patients with temporarily healed nasal lupus, because of the danger of a recurrence and an extension of the process. The operation is temporarily contraindicated on all patients with an acute process in the region of the nose, especially an acute rhinitis. If there exists a decided purulent secretion it is best to put off the operation until there is a marked improvement, unless urgent reasons for operating are present. Patients suffering with tertiary syphilitic lesions in the nose must not be operated on until healing has taken place and a long time has elapsed without recurrence. The essential feature in the technic of the operation is that by means of a long speculum, Killian makes a median space between the two mucous layers of the septum, in which he can operate as easily as in the inside of either nasal cavity. The entrance to this space is the incision which becomes rectangular in shape through the use of the speculum. All the other parts of the operation group themselves about this fundamental idea. The operation is completed in about twenty minutes.

67.—See abstract in The Journal, August 12, 1903, page 495.

American Journal of Urology, New York.

July.

68 *Clinical and Experimental Studies Concerning the Pathogenesis of Epididymitis Gonorrhoica. M. Oppenheim and O. Low, Vienna.
69 Present-Day Status of Tuberculosis of the Male Genital Organs. E. R. W. Frank, Berlin.
70 Untoward Results of Perineal Prostatectomy. G. S. Whiteside, Portland, Ore.
71 Syringe Versus the Irrigator in Gonorrhea. F. C. Valentine and T. M. Townsend, New York.

68. **Pathogenesis of Epididymitis Gonorrhoica.**—Summing up the results of their observations and experiments, Oppenheim and Loew find certain peculiarities in the origin of this affection. As causes they found besides violent muscular exertion, mechanical or chemical irritations of the posterior urethra, and ejaculations of semen. In a great number of cases the inflammation does not involve the vas deferens, but localizes itself in the tail of the epididymis, later affecting the other parts of the epididymis and also the vas deferens. The rapidity of the appearance could not be explained, but the experiments and microscopic examination speak against a lymphatic transportation. These properties are explained directly by supposing that the transportation of the process into the epididymis is caused by retroperistalic movement of the vas. Such movement is observed in rabbits, guinea-pigs and man, and it is possible to produce it by all the factors which could cause an epididymitis, such as violent trauma, and irritation of the caput gallinaginis. It is an important factor in every ejaculation. Furthermore, it is possible to produce epididymitis experimentally in rabbits, if cocci are present in the posterior urethra, by this retro-peristaltic movement, quite analogous to human gonorrheal epididymitis. As to the theory of the affection, the authors emphasize that the application of instruments of any kind is contraindicated in acute posterior urethritis, and that every necessary exploration of the prostate must be made with great caution. The patient must refrain from sexual excitement and violent muscular exertion. The more severe the posterior urethritis, the greater the danger. If epididymitis exists on one side, all local treatment of the posterior urethra should be suspended because there is danger of the other epididymis becoming affected. In subacute and chronic posterior urethritis, when gonococci are still present, the use of irritating injections should be avoided.

Wisconsin Medical Journal, Milwaukee.

June.

72 Address of President of State Medical Society of Wisconsin. C. W. Oviatt, Oshkosh.
73 State Society, State University and State Medicine. C. R. Bardeen, Madison.
74 Surgical Treatment of Posterior Malpositions of Uterus. G. A. Carhart, Milwaukee.
75 Meningitis. M. D. Bird, Marinette.
76 *Problem of Tuberculosis. V. C. Vaughan, Ann Arbor, Mich.
76½ *Ectopic Pregnancy. W. C. F. White, Milwaukee.
77 Hemorrhagic Disease of Newly Born. C. Flett, Waterford, Wis.

76.—See abstract in The Journal, June 24, 1905, page 2003.

76½. Id.—June 24, 1905, page 2004.

Detroit Medical Journal.

June.

78 Individual Factor in Hygiene. R. C. Cabot, Boston, and P. K. Brown, San Francisco.
79 Chemistry of Digestion. C. D. Aaron, Detroit.
80 "Inferences" of William Beaumont Concerning Gastric Digestion. H. M. Rich, Detroit.

Surgery, Gynecology and Obstetrics, Chicago.

July.

81 Iodin in Surgery, with Special Reference to Its Use as an Antiseptic. N. Senn, Chicago.
82 New Plan of Procedure in Retrouterine Displacements. E. E. Montgomery, Philadelphia.
83 Short Incisions in Certain Common Operations. W. Van Hook, Chicago.
84 *Postoperative Vomiting. E. Boise, Grand Rapids, Mich.
85 Appendicitis and Pregnancy. J. C. Webster, Chicago.
86 *Sudden Death During or Immediately After the Termination of Pregnancy or Operation on the Pelvic Organs in Women. E. P. Davis, Philadelphia.
87 *Pernicious Vomiting of Pregnancy. J. W. Williams, Baltimore.
88 *Clinical Types of Pregnancy Toxemia. J. C. Edgar, New York.
89 *Appendicitis Complicating Pregnancy. H. C. Coe, New York.
90 Vaginal Cesarean Section: Its Indications, Advantages and Technic. H. D. Fry, Washington, D. C.

84.—See abstract in The Journal, June 17, 1905, page 1954.

86. Id.—June 17, 1905, page 1957.

87. Id.—June 17, 1905, page 1956.

88. Id.—June 17, 1905, page 1956.

89. Id.—June 10, 1905, page 1878.

Medical Fortnightly, St. Louis, Mo.

July 10.

91 Cancer and Its Treatment. W. S. Bainbridge, New York.
92 Relation of Man to Nature (A Study Prompted by Testimonies of the Sepulchres). A. S. Ashmead, New York.
93 Albuminuria. C. E. Cole, Jacksonville, Ill.
94 Warner-Ziemann-Romanowsky Staining Method. L. H. Warner, New York.
95 Anatomic Eponyms. R. S. Gregg, Chicago.

American Journal of Orthopedic Surgery, Philadelphia.

July.

46 President's Address, American Orthopedic Association. E. G. Brackett, Boston.
47 Coxa Vara Adolescentium and Osteoarthritis Deformans Coxæ. A. H. Freiberg, Cincinnati.
48 *Study of Thirty Cases of Chronic Non-Tuberculous Joint Disease Occurring in Adults, with Special Reference to Some of Doubtful Identity. H. W. Jones, St. Louis.
49 *Operative Treatment of Bone Tuberculosis. C. F. Painter, Boston.
50 Limitations of Erasions in Coxalgia. R. T. Taylor, Baltimore.
51 *X-Ray as an Auxiliary Treatment in Bone Tuberculosis. F. E. Peckham, Providence, R. I.
52 Skiagraphic Revelations in Rachitic Deformities of the Legs. W. Blanchard, Chicago.
53 Congenital Absence of Tibia: Transplantation of Head of Fibula; Arthrodesis at the Ankle Joint. T. H. Meyers, New York.
54 Practical Importance of Correct Foot Postures. H. L. Taylor, New York.

48. **Chronic Nontuberculous Joint Disease.**—Jones cites thirty cases of monarticular joint disease of nontuberculous origin, and representing four types: 1. Cases characterized principally by hypertrophy of the joint. 2. Cases characterized by atrophy of the joint. 3. Cases of undoubted joint infection. 4. Cases of probable periarthritis in which infection was uncertain and in which no permanent changes in the joint could be definitely shown. Of the hypertrophic variety there were seven cases, three affecting the spine, two the hip, and one each the knee and elbow. All the patients were men between 35 and 50 years of age, none of them arteriosclerotic. The duration of the disease was from 12 years to a little less than one year. In all but one case the joints involved were those subject to weight bearing. In only one (the elbow) could a definite primary cause (syphilis), be assigned; trauma seemed to bear a definite relation to the disease in only one case. In all save one the disease had been progressing steadily for the worse. The treatment consisted mainly in the use of jackets in the spine cases, coupled with rest in bed several weeks in two on account of sciatica. A spica, a high sole in one of the hip cases, and the use of a cane in another; partial fixation of the knee in a leather support, and the administration of potassium iodid and biniodid of mercury in the case in which the elbow was affected, was the treatment employed in the other cases. This latter case and in one of the spine cases the patients can be said to be well. In three cases (a spine, a hip and a knee) the patients have been relieved, and in two (a spine and a hip), practically no change has taken place. Of the second type there was but one case, occurring in a woman of 36; the disease having existed six years. The left knee was ankylosed in the fully extended position, due to confinement in plaster for two years. Forcible manipulation under anesthesia resulted in a movable joint with about 60 degrees of flexion allowed. There were five cases of type 3. Two of these were cases of spondylitis in young adults, one developing directly after childbirth and coincident uterine infection, and the other occurring in a young man. The first patient recovered in four months after the jacket and brace treatment. The other patient died of typhoid, the spinal affection probably taking its origin in the typhoid. The remaining cases had definite relation to gonorrhea, the joints affected being the hip, knee and ankle. The remaining cases (seventeen in all) belonged to type four. In all, except one, the shoulder was involved; the exceptional case being of the elbow. The affection is an inflammatory disease of the shoulder, characterized by severe pain referred to the anterior part of the joint; the point most painful to pressure being the anterior portion of the head of the humerus. The pain often radiates down the arm or across the scapula. Muscular spasm is pronounced in the early stages, being more severe at night. Final results in these cases were quite satisfactory.

49. **Operative Treatment of Bone Tuberculosis.**—Painter believes that there is a very definite field for radical surgery in tuberculous disease; that this field can be very exactly outlined by certain specific rules to which it is not possible often to make exception; that there would be a great deal less needed of consideration of operative surgery than there is now if cases were properly managed through the earlier stages of the disease; that tuberculosis in the bones and joints is tuberculosis and is not simply joint disease; that the principles which underlie the successful treatment of tuberculosis, pulmonary or otherwise, as certainly underlie the treatment of this disease in the bones and joints as they do anywhere else, and that one who attempts this kind of surgery without being in a position to follow out the treatment other than operative had much better forego the operative measures in the majority of instances and give his patients the benefit of nature's restorative measures. Joints which have suffered from tuberculosis infection in childhood, relapsing in adult life, yield the best results if ankylosis can be secured in a good position. If motion is present, together with deformity, the deformity should be corrected, provided there are as many as twenty-five degrees of motion; if less motion than this, and deformity exists, it should be corrected and ankylosis secured at the same time. If deformity is present with ankylosis, the ankylosis should be left alone, and the deformity overcome. If motion without deformity is present and this motion is less than the above mentioned number of degrees, it is safer to secure ankylosis, as the irritation of so few degrees of motion tends to stir up latent disease. This would be called for, of course, unless there were symptoms of oft-repeated joint strain or active disease.

51. **The X-Ray In Bone Tuberculosis.**—Peckham reports five cases of bone tuberculosis, treated with the *x*-ray, as an auxiliary to other treatment, three times a week. All the cases were suppurative, two of them being considered desperate. One is put down as a failure, although even here there was slight temporary improvement, two were markedly improved, while the two desperate cases were practically saved from amputation, one being a knee, the other an elbow.

Physician and Surgeon, Ann Arbor, Mich.

July.

55 *Experiences in Kidney Surgery and the Utility of Diagnostic Aids. C. H. Chetwood, New York.
56 Ascending Neuritis. W. J. Herdman, Ann Arbor.
57 Psychotherapeutics of Neurasthenia. J. C. Solis, Ann Arbor.

55. **Kidney Surgery and Utility of Diagnostic Aids.**—As the result of careful study of personal cases, and an examination of the literature on the subject, Chetwood concludes as follows: In profuse suppuration of the kidney, or multiple abscess of either kidney, there is a question whether nephrotomy or nephrectomy should be primarily resorted to—a question that can only be properly decided on the merits of each case involved. There is no doubt that a very small remnant of kidney structure may perform a certain amount of renal function; and primary nephrotomy and drainage will often give time to decide this question more satisfactorily; and some patients may sustain a secondary better than a primary nephrectomy. General systemic infection may be considered in indication for both primary and secondary nephrectomy. As to lithiasis: The same rules may be applied in the treatment of the kidney itself as are employed in suppuration with renal calculi. There is no question that nephrotomy is the operation indicated in aseptic lithiasis. As to tuberculosis of the kidney: Even when there is a vesical and pulmonary involvement the only resort of reasonable promise is nephrectomy when the integrity of the opposite kidney is established. Generally speaking, in urogenital tuberculosis, removal of the primary focus, which is frequently in the kidney, is likely to exercise an inhibitory influence on the distal implication—as, for instance, vesical involvement. In subcutaneous injury to the kidney, where there is evidence of a perirenal tumor with hematuria, immediate exploratory incision should be employed and, when possible, suture and tamponade should be resorted to. Where the vessels or ureter have been ruptured and the laceration of the kidney is extensive, or where the injuries are complicated by beginning or progressing suppuration, total nephrectomy may be necessary. Conservative operation is favored by a majority of authors and symptomatic treatment is considered effective in mild cases. A safe rule is to resort to exploratory incision in all doubtful cases and to perform extirpation only when necessary. Above all, too much stress cannot be laid on the importance of the refinement of diagnosis and the advantage of having recourse to the

most improved methods of investigation. The great and progressive reduction of mortality is attributable to diagnostic improvement. Marked differences in mortality between different operators may be explainable by the failure to employ the latest diagnostic resources. Chetwood says that what the compass, the sextant, and the chart are in governing the route of the navigator, so are the microscope, the cystoscope and the x-ray in directing the course of the surgeon through the obscure realm of kidney surgery.

Annals of Otology, Rhinology and Laryngology, St. Louis, Mo.

June.

58 Deflections of the Nasal Septum: Critical Review of the Methods of Their Correction by the Window Resection. O. T. Freer, Chicago.
59 The Nose and Its Accessory Sinuses in the American Bear. J. M Ingersoll, Cleveland, Ohio.
60 Stricture of the Eustachian Tube in Aural Diseases, and Its Treatment. W. S. Bryant, New York.
61 Collodion. Its Use When the Membrana Tympani and Malleal Ligaments are Relaxed. W. S. Bryant, New York.
62 The Cause and Treatment of Hay Fever. W. Dunbar, Hamburg.
63 Serum Treatment of Hay Fever. H. W. Lord, St. Louis.
64 Otitis Media Mucosa. J. E. Sheppard, Brooklyn.
65 Otogenous Infectious Thrombophlebitis Without Fever. G. Alexander.
66 *Submucous Window Resection of the Nasal Septum. G. Killian, Freiburg, Germany.
67 *Submucous Resection of the Nasal Septum, New Technic with the Author's Swivel Knife, Reducing the Average Time of the Operation Several Minutes. W. L. Ballenger, Chicago.

66. **Submucous Window Resection of Nasal Septum.**—Killian describes, in detail, the operation devised by him and first reported in 1899. Two hundred and twenty patients have been operated on by Killian and his assistants according to this method. The submucous resection of the septum can be both temporarily and permanently contraindicated. The latter applies to people of advanced age, unless there are important reasons for interference. Small children are also not good subjects for such an operation as their nasal proportions are small and the narcosis is not so satisfactory. From 12 years on, however, the operation generally can be performed. Various chronic constitutional diseases are contraindications to operation. In pulmonary tuberculosis, one should operate only during the early stages, and then only on well-nourished patients with a good prospect of a standstill or healing of their disease. Killian never operates on patients with temporarily healed nasal lupus, because of the danger of a recurrence and an extension of the process. The operation is temporarily contraindicated on all patients with an acute process in the region of the nose, especially an acute rhinitis. If there exists a decided purulent secretion it is best to put off the operation until there is a marked improvement, unless urgent reasons for operating are present. Patients suffering with tertiary syphilitic lesions in the nose must not be operated on until healing has taken place and a long time has elapsed without recurrence. The essential feature in the technic of the operation is that by means of a long speculum, Killian makes a median space between the two mucous layers of the septum, in which he can operate as easily as in the inside of either nasal cavity. The entrance to this space is the incision which becomes rectangular in shape through the use of the speculum. All the other parts of the operation group themselves about this fundamental idea. The operation is completed in about twenty minutes.

67.—See abstract in THE JOURNAL, August 12, 1903, page 495.

American Journal of Urology, New York.

July.

68 *Clinical and Experimental Studies Concerning the Pathogenesis of Epididymitis Gonorrhoica. M. Oppenheim and O. Low, Vienna.
69 Present-Day Status of Tuberculosis of the Male Genital Organs. E. R. W. Frank, Berlin.
70 Untoward Results of Perineal Prostatectomy. G. S. Whiteside, Portland, Ore.
71 Syringe Versus the Irrigator in Gonorrhea. F. C. Valentine and T. M. Townsend, New York.

68. **Pathogenesis of Epididymitis Gonorrhoica.**—Summing up the results of their observations and experiments, Oppenheim and Loew find certain peculiarities in the origin of this affection. As causes they found besides violent muscular exertion, mechanical or chemical irritations of the posterior urethra, and ejaculations of semen. In a great number of cases the inflammation does not involve the vas deferens, but localizes itself in the tail of the epididymis, later affecting the other parts of the epididymis and also the vas deferens. The rapidity of the appearance could not be explained, but the experiments and microscopic examination speak against a lymphatic transportation. These properties are explained directly by supposing that the transportation of the process into the epididymis is caused by retroperistalic movement of the vas. Such movement is observed in rabbits, guinea-pigs and man, and it is possible to produce it by all the factors which could cause an epididymitis, such as violent trauma, and irritation of the caput gallinaginis. It is an important factor in every ejaculation. Furthermore, it is possible to produce epididymitis experimentally in rabbits, if cocci are present in the posterior urethra, by this retro-peristaltic movement, quite analogous to human gonorrheal epididymitis. As to the theory of the affection, the authors emphasize that the application of instruments of any kind is contraindicated in acute posterior urethritis, and that every necessary exploration of the prostate must be made with great caution. The patient must refrain from sexual excitement and violent muscular exertion. The more severe the posterior urethritis, the greater the danger. If epididymitis exists on one side, all local treatment of the posterior urethra should be suspended because there is danger of the other epididymis becoming affected. In subacute and chronic posterior urethritis, when gonococci are still present, the use of irritating injections should be avoided.

Wisconsin Medical Journal, Milwaukee.

June.

72 Address of President of State Medical Society of Wisconsin. C. W. Oviatt, Oshkosh.
73 State Society, State University and State Medicine. C. R. Bardeen, Madison.
74 Surgical Treatment of Posterior Malpositions of Uterus. G. A. Carhart, Milwaukee.
75 Meningitis. M. D. Bird, Marinette.
76 *Problem of Tuberculosis. V. C. Vaughan, Ann Arbor, Mich.
76½ *Ectopic Pregnancy. W. C. F. White, Milwaukee.
77 Hemorrhagic Disease of Newly Born. C. Flett, Waterford, Wis.

76.—See abstract in THE JOURNAL, June 24, 1905, page 2003.

76½. Id.—June 24, 1905, page 2004.

Detroit Medical Journal.

June.

78 Individual Factor in Hygiene. R. C. Cabot, Boston, and P. K. Brown, San Francisco.
79 Chemistry of Digestion. C. D. Aaron, Detroit.
80 "Inferences" of William Beaumont Concerning Gastric Digestion. H. M. Rich, Detroit.

Surgery, Gynecology and Obstetrics, Chicago.

July.

81 Iodin in Surgery, with Special Reference to Its Use as an Antiseptic. N. Senn, Chicago.
82 New Plan of Procedure in Retrouterine Displacements. E. E. Montgomery, Philadelphia.
83 Short Incisions in Certain Common Operations. W. Van Hook, Chicago.
84 *Postoperative Vomiting. E. Boise, Grand Rapids, Mich.
85 Appendicitis and Pregnancy. J. C. Webster, Chicago.
86 *Sudden Death During or Immediately After the Termination of Pregnancy or Operation on the Pelvic Organs in Women. E. P. Davis, Philadelphia.
87 *Pernicious Vomiting of Pregnancy. J. W. Williams, Baltimore.
88 *Clinical Types of Pregnancy Toxemia. J. C. Edgar, New York.
89 *Appendicitis Complicating Pregnancy. H. C. Coe, New York.
90 Vaginal Cesarean Section: Its Indications, Advantages and Technic. H. D. Fry, Washington, D. C.

84.—See abstract in THE JOURNAL, June 17, 1905, page 1954.

86. Id.—June 17, 1905, page 1957.

87. Id.—June 17, 1905, page 1956.

88. Id.—June 17, 1905, page 1956.

89. Id.—June 10, 1905, page 1878.

Medical Fortnightly, St. Louis, Mo.

July 10.

91 Cancer and Its Treatment. W. S. Bainbridge, New York.
92 Relation of Man to Nature (A Study Prompted by Testimonies of the Sepulchres). A. S. Ashmead, New York.
93 Albuminuria. C. E. Cole, Jacksonville, Ill.
94 Warner-Ziemann-Romanowsky Staining Method. L. H. Warner, New York.
95 Anatomic Eponyms. R. S. Gregg, Chicago.

July 25.

96 Case of Raynaud's Disease. W. L. Howard, Baltimore.
97 *American Medical Association: Its Origin, Progress and Purpose. L. S. McMu[illegible], [illegible], Ky.
98 Relation of Man to [illegible] A [illegible] Prompted by "Testimonies of the Sepu[illegible]" [illegible]. A. S. Ashmead, New York.
99 Injuries to the Spinal Column. C. E. Black, Jacksonville, Ill.
100 *Anatomic Eponyms.* (Continued.) R. S. Gregg, Chicago.

97. Id.—July 15, 1905, page 145.

Virginia Medical Semi-monthly, Richmond.

July 21.

101 Acute and Chronic Gastritis, Diagnosis and Treatment. M. O. Burke, Honaker, Va.
102 When Shall We Use the Forceps? N. H. Reeve, Bristol, Tenn.
103 Physical Therapeutics. J. C. Walton, Chase City, Va.
104 Principles of Surgery. S. McGuire, Richmond, Va.

St. Paul Medical Journal.

July.

105 [illegible] [illegible]nott, Dublin, Ireland.
106 [illegible] of Workingmen's Insurance Against [illegible] Ulrich, Minneapolis.
107 [illegible] of Tuberculosis Pulmonalis. R. M. [illegible] Minn.
108 Gastric Cancer. J. W. Bell, Minneapolis.
109 Suggestions Concerning the Treatment of Some Common Forms of Nervous Disease. C. E. Riggs, Minneapolis.

Mobile Medical and Surgical Journal.

July.

110 Blood Smears—Their Diagnostic Value. J. B. Guthrie, New Orleans, La.
111 Pancreatic Cyst. C. Wilson, Birmingham, Ala.
112 Hip Joint [illegible] M. Pitts, Selma, Ala.
113 Diagnosis a[illegible] Some Forms of Kidney Disease. [illegible] Ala.

New York State Journal of Medicine.

July.

114 Cerebrospinal Meningitis. H. Brooks, New York.
115 Acute Intestinal Intussusception. D. C. Moriarta, Saratoga Springs, New York.
116 Treatment of Acute Otitis Media. C. S. Payne, Liberty, N. Y.
117 Need of Sexual Education. E. L. Keyes, Jr., New York.
118 Dislocation of Foot Backward, Without Fracture of Bones, or Rupture of Ligaments, Which is Irreducible. G. C. Bayley, Poughkeepsie, N. Y.
119 Unilateral and Other Unusual Forms of Nystagmus. A. Duane, New York.
120 Surgical Treatment of Gastric Ulcer. J. F. Erdmann, New York.
121 Selection and Administration of the Anesthetic. J. T. Gwathmey, New York.
122 Dynamics of Female Pelvis, with Special Reference to Malpositions of Uterus and Their Treatment. G. C. Childs, New York.

FOREIGN.

Titles marked with an asterisk (*) are abstracted below. Clinical lectures, single case reports and trials of new drugs and artificial foods are omitted unless of exceptional interest.

British Medical Journal.

August 5.

1. The State and the Profession, Address British Medical Association. J. M. Rhodes.
2. The Professional Relations Between Spa Doctors and Their Brethren. A. Mouillot.
3. *Experimental Contribution to the Treatment of Cholelithiasis. W. Bain.

3. Cholelithiasis.—The experiments described by Bain were undertaken to ascertain the changes undergone by gallstones introduced into the normal gall bladder, and the fat of such calculi when cholecystitis was artificially produced. Various substances were also given to dogs with cholecystitis in the hope of finding a remedy. The operative procedures were as follows: After the animal was anesthetized the skin of the abdomen was prepared, and a median incision two or three inches long was made from the xyphoid downward. The gall bladder was drawn forward and held by Spencer Wells forceps. It was then incised, the bile soaked up and the stones inserted. Sutures were applied in the usual way, and in a majority of the experiments the gall bladder was stitched to the abdominal wall; in others it was dropped back into the abdominal cavity. When Bain wished to set up cholecystitis, a culture of the *Bacillus coli communis* in normal saline solution was injected into the gall bladder before the last stitch was inserted. Bain found that gallstones introduced into a normal gall bladder become dissolved within a comparatively short space of time, in about eight or nine weeks. That when a mild degree of cholecystitis is set up gallstones inserted into the gall bladder do not disappear, although there is always a reduction in weight. That the introduction of various drugs does not appear to have any effect in resolving calculi introduced into a gall bladder the mucous membrane of which is inflamed. That during a course of the sulphur water gallstones become disintegrated in cases of cholecystitis experimentally induced. That in the treatment of artificially produced cholelithiasis a preparation containing hexamethylenamin has a pronounced effect in causing dissolution of the calculi. That in regard to the action of barium chlorid further experiments are necessary to determine its rôle in experimentally-produced cholelithiasis.

The Lancet, London.

August 5.

4 Chemical Correlation of the Functions of the Body. E. H. Starling.
5 Carbohydrate Metabolism. F. W. Pavy.
6 *Spa Treatment of Circul[illegible] Williams.
7. Surgery at Sea: Case of [illegible] Ulcer; Operation; Recovery. H. W. [illegible].
8 *Behavior of Leucocytes in [illegible] [illegible] J. B. Farmer, J. E. S. Moore and [illegible].
9 Cerebrospinal Meningitis in [illegible]. A. [illegible].
10 Analysis of 300 Consecutive Gynecologic Laparotomies. A. H. N. Lewers.
11 Case of Blackwater Fever. E. S. Crispin.
12 Two Cases of Acute Hemorrhagic Pancreatitis. H. W. Webber.

6. Spa Treatment of Circulatory Disorders.—Williams discusses the therapeutic value of the various European spas, particularly Bad Nauheim. He says that the Nauheim treatment can be obtained elsewhere than at Bad Nauheim and that this spa possesses many unpleasant features and some decided disadvantages. From the points of view of climate and accessibility Nauheim is by no means a place to which a cardiac patient should be advised to go. The treatment by Nauheim baths is quite unsuited to the great majority of cardiac disorders, and its indiscriminate recommendation, even when dilatation is the most prominent objective feature, is by no means free from danger. In deciding on the respective claims of the numerous spas at which cardiovascular diseases may be treated, it is necessary to take into consideration various factors. In general, it may be said, that any spa at which gout is properly treated is, potentially at any rate, a spa suitable to a cardiac lesion. It must be remembered, however, that physicians at such resorts are not, as a rule, in the habit of dealing with cardiac disorders; and, furthermore, that certain health resorts, the waters of which are well adapted to the gouty, have specialized in troubles of the cardiovascular system. To get the best results from spa treatment, patients should be treated in the earliest stages, in the stage of arterial spasm, which has not as yet led to organic change.

8. Behavior of Leucocytes in Malignant Growths.—Farmer, Moore and Walker give an account of observations relating to the peculiar behavior of leucocytes in very early examples of carcinoma in various parts of the human body. The phenomena described appeared to be mainly, if not entirely, restricted to cancer in its earliest stages and did not occur in older growths, in metastases, or in grafts introduced into other individuals. In a rectal carcinoma the size of a bean it was found that there was a very distinct zone of transition from the normal to the cancerous element round the periphery of the tumor. Immediately within the outer zone the leucocytic crowding was most strikingly apparent, and in a number of cells it was easy to discern the presence of leucocytes which had invaded the epithelial cells, where they stained readily as an inclusion. This phenomenon did not occur in the adjacent healthy tissue nor in inflammations produced artificially. The most important, as well as the most singular, feature lies in the fact that neither the leucocyte nor the invaded tissue cell appeared to be affected injuriously. In many instances it was found that both the leucocyte and the tissue cell were dividing mitotically at the same time. The authors believe that a mixture of the chromosomes derived from the leucocyte and tissue cell, respectively, is distributed between the daughter nuclei resulting from the mitosis. In this way a complete disturbance of the normal chromosome constituents of the cell will be effected and the distribution must be of a qualitative as well as of a quantitative character. What its relation to the ultimate reduction that occurs in neoplastic cells may be is a subject for further investigation.

The Practitioner, London.

August.

13 Pathologic Variations of Physiologic Vasomotor Action with Special Reference to the Malarial Paroxysmal Neuroses. F. Hare.
14 *Intestinal Obstruction After Pelvic Operations, Particularly After Supravaginal Hysterectomy. E. M. Corner.
15 Edema of the Feet and Legs Due to the Excessive Ingestion of Sodium Chlorid. J. H. Bryant.
16 Diffuse Carcinoma of the Stomach, Illustrated by Two Extreme Cases. E. W. H. Groves.
17 Hydrocephalus and Posterior Basic Meningitis. O. Hildesheim.
18 Current Theories Regarding the Causation of Arteriosclerosis. J. M. Cowan.
19 Work of the Pancreas. W. L. Brown.

14. Intestinal Obstruction After Pelvic Operations.—The object of Corner's paper is to enunciate two propositions: First, the small intestines are only too prone to become adherent to the uterine stump left after supravaginal hysterectomy; and, second, that the reasons for this are to be found in the nature and technic of the operation as it is usually performed. The operation which stands pre-eminent among all others in causing this complication is supravaginal hysterectomy. The presence of the uterine stump among the small intestines undoubtedly disposes them to become adherent. Corner suggests that there are means of obviating these occurrences. The stump should be sealed off quickly and in such a manner that the peritoneal edges do not gape. The best method of suturing a uterine stump consists of deep stitches, with intermediate ones, taking up little more than peritoneum, in between. Stitches must not be tied too tightly, but just sufficiently to sink the thread in a groove in the stump. A long posterior flap is the one which is most useful. It covers the cervical stump of the amputated uterus, a continuous suture fixes it to the bottom of the uterovesical pouch, at the same time anteverting the stump so that it covers and protects the line of stitching from the intestines, preventing them from becoming adherent.

Journal of Tropical Medicine, London.

August 1.

20 Spirillosis in Portuguese, West Africa. A. Y. Massey.
21 The Aborting of Liver Abscess: Plea for Early Punctures. P. N. Gerrard.
22 Administrative Measures Taken Against Malaria and Consumption in the Tropics. R. C. Temple.
23 Equipment and Hygiene on "Shooting Trips." G. A. P. Ross.
24 Impaction of the Bowels with Inflammation and Perityphlitis. G. H. Fink.

Virchow's Archiv, Berlin.

25 (CLXXX, No. 1.) Fatty Infiltration and Fatty Degeneration of Kidney.—Ueber Fett-Infiltration und fettige Degeneration der Niere des Menschen. M. Löhlein.
26 Ueber die Thyroidea von Kretinen und Idioten. S. Getzowa (Berne).
27 Mucous Zone of Epithelium of Stomach and Intestine Before and After Birth.—Schleimzone des menschlichen Magen und Darmepithels vor und nach der Geburt. E. v. d. Leyen (Berlin).
28 Lymphoid Tissue in Mucosa of Male Urethra.—Ueber das Vorkommen lymphoiden Gewebes in der Schleimhaut der männlichen Urethra. Busch.
29 Ueber Gliome der Nebennieren (of suprarenals). H. Küster.
30 Zur Pathogenese der Varicen. W. Kallenberger.
31 Ueber Phlebektasie. G. Scagliosi (Catania).
32 Zur Frage der Entstehung des Chorionepithelioms aus congenitaler Anlage. L. Pick
33 Aetiologie der primären Nebenhoden-Tuberkulose (of epididymis). E. Hartung.
34 (CLXXX, No. 2.) Zur Kenntnis der Blut-Fermente (of blood). A. Jolles and M. Oppenheim.
35 [illegible] uchungen über das Adrenalin. B. [illegible]
36 *[illegible] on Stomach Functioning.—Experimen[illegible] über die Einwirkung der Elektrizität auf die sekretorische Tätigkeit des Magens. R. Freund.
37 Die Sympathischen Ganglien des Magens bei einigen experimentellen und spontanen Magen-Krankheiten. L. d'Amato and P. Macri.
38 Fall von spontaner Herz-Ruptur (of heart). C. Hart.
39 Angioma racemosum und serpentinum des Gehirns (of brain). M. Simmonds.
40 Genese des Adeno-Karzinoms und Karzinoms des Pankreas. S. P. L. Hulst.
41 Di[illegible] lorus-Hyperplasie eine Entwick-[illegible]
42 De[illegible] of Fetuses.—Abnormitäten am Foeten. R. Meyer.
43 Ueber Amyloid-Degeneration and Amyloid-Färbung (staining). Edens.
44 Verfahren zur Erzielung haltbarer Amyloid-Präparate (durable specimens). P. Meyer.
45 Metal Stain for Calcified Tissue.—Ueber Metalfärbung verkalkter Gewebeteile. W. Stoeltzner.
46 (CLXXX, No. 3.) Experimentelle Beiträge zur Aetiologie des primären Verbrennungstodes (death from burning). H. Pfeiffer.
47 Ueber Lymphocyten-Granula. Levaditi.
48 Entstehung der echten, freien Gelenkkörper (origin of free bodies in joints). H. Rimann. Experimental.
49 Ueber das Aneurysma am Stamme der Pulmonal-Arterie. M. Lissauer.
50 Action of Allyl Mustard Oil on Liver and Kidneys.—Wirkung des Allylsenföls auf Leber und Niere. P. Meyer.
51 Tissue Changes in Displaced Testicles, Epididymis and Vas Deferens.—Gewebsveränderungen des verlagerten Hodens, etc. M. Matsuoka.
52 Der primäre Leberkrebs zugleich ein Beitrag zur Histologie des Krebses. H. Oerter (New York).
53 [illegible] dem Boden von [illegible]
54 [illegible] in der Prostata glandular formation). A. Rothschild.
55 Aetiologie der Prostata-Hypertrophie. Id.
56 Ueber einen weiteren Fall von abdomineller Nebenlunge (abdominal accessory lung). A. Seltsam.
56½ Gliome der Nebennieren (of suprarenals). J. Wiesel.

36. Action of Electricity on Secretion of Gastric Juice.—In Freund's experiments on three dogs with old Pawlow fistulas electric stimulation of the stomach caused nothing more than the secretion of a scanty, mucous and a more or less strongly alkaline secretion. The stomach glands did not react with the production of gastric juice except with the natural stimulus of food. The electricity alone was unable to induce the specific secretion.

Wiener klinische Wochenschrift.

Last indexed page 600.

57 XVIII, No. 23.) *Anatomic Signs of Antemortem and Postmortem Burns.—Ueber die anatomischen Kennzeichen der vitalen und postmortalen Verbrennung. F. Reuter.
58 Beiträge zur Pathologie der Vulvitis. O Sachs.
59 Hay Fever and Its Specific Treatment with Pollantin.—Das Heufieber und seine spezifische Behandlung mit Pollantin. A. Heindl.
60 (No. 24.) Der Micrococcus meningitis cerebrospinalis als Erreger von Endokarditis sowie sein Vorkommen in der Nasenhohle Gesunder u. Kranker (presence in nose in health and in disease and as a cause of endocarditis). A. Weichselbaum and A. Ghon.
61 Zur Dynamik der Mitral Insufizienz. (Dynamics of.) E Schwarz.
62 Differentiation of Semen Albumin.—Beiträge zur Lösung des biologischforensischen Problems der Unterscheidung von Spermaeiweis gegen über den anderen Eiweisarten derselben Spezies durch [illegible]feiffer.
63 *Zur operativen [illegible] Luxation der Kniescheibe na[illegible] luxation of patella). R. v. Rüdiger.
64 *(No. 25.) Zur op[illegible] phrenischen Abszesses. P. Cl[illegible]
65 *Negri Bodies in Ra[illegible] ischen Körperchen bei der [illegible]
66 *Negri Bodies in Rabies.—Ueber die feinere Struktur der Negrischen Körper. R. Maresch.
67 D[illegible] erium mit mitbesonderer Rücksicht [illegible] Salus.
68 G[illegible] in Animal Body.—Ueber die Wacheubazillus im Tierkorper. E. Weil.
69 C[illegible] in Research on Immunity.—Anteil [illegible] der Immunitätsforschung. H. Bechold.
70 (No. 26.) Ueber Pellagra sine Pellagra. T. Lupu.
71 Ueber die Agglutinabilität der Kapsel Bakterien. O. Porges.
72 *Weitere Mitteilung uber Rückenmarksanaesthesie (spinal analgesia). J. Preindlsberger.
73 (No. 27.) Ueber primäre maligne Degeneration der zystischen embryoiden Geschwulste der Ovarien (embryonic ovarian tumors). H. Ludwig.
74 Ueber Antihämolysine. M. v. Eisler.
75 Beitrag zur Aetiologie und Behandlung der multiplen Sklerose. G. Nespor.
76 Ueber den Fusohlenreflex und das Babinskische Phänomen bei tausend Kindern der ersten Lebensjahre (plantar reflex and Babinski in children). A. Bickel.

57. Differentiation of Antemortem and Postmortem Burns.—Reuter believes that it is impossible to determine by examination of the cadaver whether a burn of the first, second or third degree occurred during life or after death. The viscera should be examined for carbon particles and evidences of carbonic oxid asphyxiation. Serous blebs may form on edematous parts, hence they do not indicate that the burn occurred during life.

63. Habitual Luxation of Patella.—Ruediger's patient was a girl 10 years old, who sustained a severe injury of the patella which was followed by a habitual luxation of this bone, the result of improper treatment. The knee joint was very painful and at times became swollen. The patient was operated on according to the method of Ali Krogius, which the author believes to be the ideal operation for this class of cases. The patient made a perfect recovery.

64. Operative Treatment of Subphrenic Abscesses.—Clairmont and Ranzi cite *ten cases, seven males* and three females, most of whom were between the ages of 20 and 30, in three cases the abscess emptied itself through the appendix. In eight cases the abscess was situated on the right side; in two on the left side. In one case the abscess was situated between the stomach, spleen and colon. All the abscesses were intraperitoneal. Tympanites appeared in five cases. In one case it was caused by the *Bacillus paracoli aerogenes*. In diagnosing this condition the authors found the Roentgen ray of value, particularly in cases showing obscure symptoms. Fluoroscopy was also used successfully. Two of the patients operated on died, one on the eighteenth day from peritonitis. The other case offered little hope of a successful outcome at the time of operation. Seven patients made a complete recovery. Two of the patients were operated on according to the method of Grueneisen. In four cases the abscess was opened by making an incision in the chest wall along the margin of the ribs, without entering the pleura. In the remaining four cases the abscess was evacuated through the lumbar region.

65. **Negri Bodies in Rabies.**—Schiffmann found these bodies in eight rabid dogs and in two men. He divides them into three kinds: 1. Large, irregularly formed bodies containing a large number of sharply-defined ringlike structures. 2. Forms containing only one variety of these internal structures. 3. Forms having a homogeneous structure. He says that it is impossible to state whether these bodies represent parasites or a degeneration of the cell protoplasm. It is just as possible that the Negri bodies are the result of the infection as that they are the cause of rabies.

66. **Id.**—*Maresch confirms the work of other investigators* and urges further experimentation for the purpose of determining definitely the nature of these so-called cell inclusions.

72. **Spinal Analgesia.**—Preindlsberger cites his experiences in the production of spinal analgesia. He uses a metal syringe, which may be taken apart. It has a capacity of one gram. The injection is made with the patient in Bier's side position. Preindlsberger has operated under spinal analgesia in 345 cases; all but 8 of these have been followed. A complete list is given of all the cases. Only one of his patients suffered from shock and collapse, although 6 others were slightly indisposed.

Centralblatt f. Gynäkologie, Leipsic.

Last indexed page 499.

77 (No. 28, July 15, [illegible] *[illegible] und Carcinoma recti. (Pregnancy [illegible]
78 Zur Anatomie des [illegible] of Lateral Incision). J. Tandler.
79 (No. 29, July 22, 1905.) *Die Sectio Caesarea an der Klinik Schauta. J. Neumann.
80 Sectio caesarea conservativa bei Tympania uteri. A. Mueller.
81 Ueber das Hæmatoma vulvæ et vaginæ. H. Walther.
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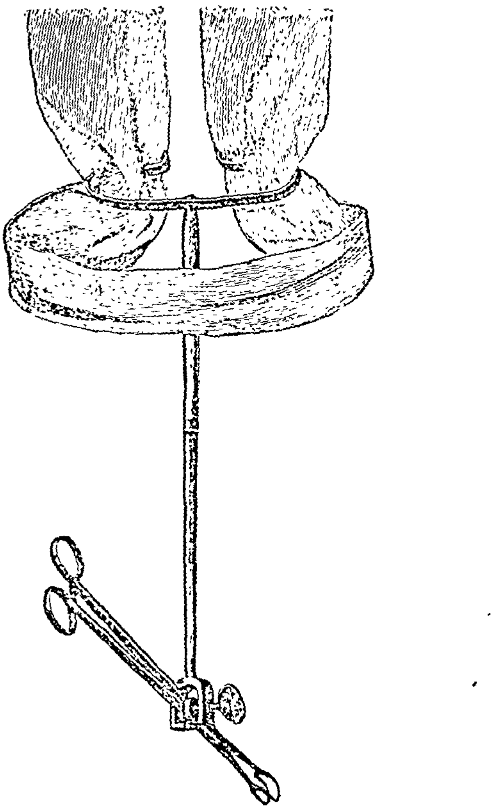

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123 Zur Physiologie und Pathologie der Bauchdeckenreflexe (reflexes of abdominal walls). E. Muller and W. Seidelmann.
124 Avoidance of Irritation of Kidney After *Large Doses of* Salicylates.—Die Vermeidung der Nierenreizung nach grossen Salizylgaben. E. Frey.
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65. **Negri Bodies in Rabies.**—Schiffmann found these bodies in eight rabid dogs and in two men. He divides them into three kinds: 1. Large, irregularly formed bodies containing a large number of sharply-defined ringlike structures. 2. Forms containing only one variety of these internal structures. 3. Forms having a homogeneous structure. He says that it is impossible to state whether these bodies represent parasites or a degeneration of the cell protoplasm. It is just as possible that the Negri bodies are the result of the infection as that they are the cause of rabies.

66. **Id.**—Maresch confirms the work of other investigators and urges further experimentation for the purpose of determining definitely the nature of these so-called cell inclusions.

72. **Spinal Analgesia.**—Preindlsberger cites his experiences in the production of spinal analgesia. He uses a metal syringe, which may be taken apart. It has a capacity of one gram. The injection is made with the patient in Bier's side position. Preindlsberger has operated under spinal analgesia in 345 cases; all but 8 of these have been followed. A complete list is given of all the cases. Only one of his patients suffered from shock and collapse, although 6 others were slightly indisposed.

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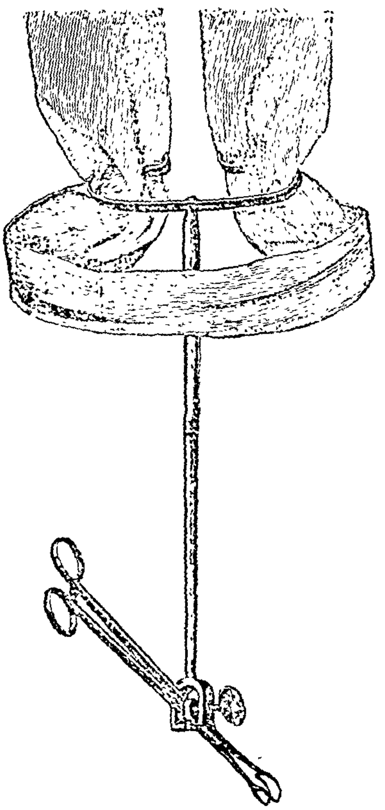

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132 (XXVI, No. 73.) Typhoid Plus Scarlet Fever.—Ileotifo con scarlattine. Allaria.
133 *X-Ray Treatment of Hypertrophied Prostate.—La cura della ipertrofia della prostata coi raggi X. C. Carabelli and C. Luraschi.
134 Morbo di Ménière probabilmente da infezione malarica. G. Spadacci.
135 Oil Extracts in Organotherapy.—Sull'opoterapia a base dei nuovi estaratti oleosi "sofos." L. De Rossi (Genoa).
136 Success of Diphtheria Antitoxin in 2 Cases of Erysipelas.—Il siero di Behring nella erispela della faccia. S. Tomaselli.
137 The Blister.—Il vesicante nella moderna terapia. E. Gugnoni.
138 Convulsions from Helminths.—Pseudo-epilessia da ascardi e la teoria della loro tossicita. S. Radaeli.
139 (No. 76.) Caso di ascite filante con richerche su la reazione degli essudati verso l'acido acetico (acetic test of effusions). E. Pesci.
140 L'anestesia cocaino adrenalinica in chirurgia generale. B. Gennaro.
141 Ascessi traumatici dei lobi frontali (abscess in frontal lobe). E. De Franceschi.
142 Osservazioni culturali sul bacillo della morva (of glanders). A. M. Coco.
143 (No. 79.) *Return of Function in Hydronephrotic Kidney.—Ritorno della funzione nel rene idronefrotico. E. Maragliano.
144 Ataxia and Vertigo in Cerebral-extracerebral Lesions.—Le zone generatrici del fenomeno atassico vertiginoso. S. Mircoli.

133. **Roentgen Treatment of Hypertrophied Prostate.**—Carabelli and Luraschi state that the experiments related in this article were commenced in May and continued through August of 1904, and that they have waited a full year before reporting them in order to ascertain the remote results. No communications in regard to Roentgen treatment of hypertrophied prostate had been published when they undertook it in two cases. The patients were 60 and 65 years of age respectively. They were placed on a sloping table, the surrounding parts carefully protected and the Roentgen rays applied to the perineum, with the tube from 20 to 25 cm. from the skin. Carabelli did not think it necessary to introduce the tube into the rectum as the atrophying action of the Roentgen rays on deep-laying glands like the ovary, spleen and lymphatics has been amply established. It is evident also that the action of the rays on the prostate is more pronounced when the hypertrophy is in the first stage, before the gland has undergone fibrous degeneration. The relief of the pains was marked from the very first. In one case the paresthesia and oppression in the perineum were accompanied by difficulty in urinating and palpation revealed moderate hypertrophy of the prostate. The rays were applied fifteen times, at first two or three times a week and then once a fortnight. The sensory symptoms vanished and urination became very much easier. In the second case the prostate was much enlarged and hard, and there were about 200 gm. of residual urine and evidences of chronic catarrh of the bladder. After six applications of the Roentgen rays the urine became clearer, the pains had subsided, urination was much easier and the residual urine was only 40 gm. After the tenth application there were only 10 c.c. of residual urine, and the patient was dismissed as practically cured. The current was applied for from three to seven minutes at a sitting in the first, and for ten minutes in the second, the current 1.5 amperes, 100 volts. The patients have been examined during the year and recently and the improvement has been found to be permanent.

143. **Return of Function in Hydronephrotic Kidney.**—Bozzi has been conducting considerable experimental research on this subject and is convinced that surgical intervention should be early in case of hydronephrosis, even if the symptoms are not disturbing. It will forestall the development of permanent changes in the tissues of the kidney which otherwise become irreparable. It will also prevent possible infection of the kidney by way of the blood. He cites some suggestive cases to show the importance of these points. In some the cystoscope and catheterization of the ureters showed limpid urine from one kidney and purulent from the other. The kidney with the purulent process was extirpated under the conviction that its mate was sound, but anuria and death soon followed. The hydronephrotic kidney after a conservative operation gradually regains its functional capacity, the extent of restitution being in inverse proportion to the duration of the process. Bozzi's experiences have shown that the microscope discloses much better functional conditions than would be supposed from the macroscopic appearance. Consequently there is every reason to retain the hydronephrotic kidney by a conservative operation.

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145 (No. 2680, April 22, 1905.) El Masaje y la Gimnasia Medica en las Afecciones Traumatica de las Articulaciones. Tripels-Dentzkof.
146 *Pelvi-Peritonitis. D. P. Lizcano.
147 (No. 2681.) El somnoformo. M. Bouthelier.
148 Luchemos Contra la Tuberculosis. J. L. de Rego.
149 *Un Caso Clinico de Chancro Palpebral Sifilitico. G. Leoz.
150 *(No. 268 [illegible] llo de la Reparacion Plastica del [illegible] D. J. Goyanes.
151 Sobre el [illegible] de la Punta. V. Montenegro.

146. **Pelvic Peritonitis.**—In this article Lizano calls attention to the often forgotten fact that in the beginning of pelvic peritonitis vaginal examination reveals little or nothing beyond a greatly increased sensibility to pain, and that at this stage of the disease the diagnosis must be made from the abdominal symptoms and from the general condition of the patient. After three or four days, he states, when the nausea and vomiting have to a certain extent subsided, careful bimanual palpation reveals the presence of an exudate filling the cul-de-sac of Douglas and occasionally projecting into the vagina. Lizano states that in some cases careful palpation will enable the physician to make out the upper border of the exudate in the hypogastric region and sometimes a zone of induration. Occasionally instead of fluctuation a solid mass will be felt. When the lesion is very extensive the uterus may be fixed in the pelvis by a mass of plastic exudate causing pain on pressure and obstructing the rectum at the level of the uterosacral ligaments. The progress of the disease varies according to the nature and intensity of the infection. In peritonitis following the puerperium or pyosalpinx, the inflammation is generally circumscribed and confined to the pelvis, and the exudate is usually walled off by adhesions. Should the abdominal peritoneum become involved, however, the constitutional symptoms—vomiting, meteorism, etc.—are aggravated. In purulent peritonitis Lizano advises evacuating the pus through the vagina. If evacuation is complete, he says, cure is possible, but if it is incomplete, fistulas of various kinds may result, with death later from septicemia. Lizano discusses the points of differential diagnosis between acute and chronic peritonitis, hematocele, and the gonorrheal and tuberculous forms of peritonitis.

149. **Palpebral Chancre.**—A young woman, aged 29, consulted Leoz for the relief of a tumor of the eyelid. The tumor was round, hard and indurated, and though the patient presented no other symptoms of the disease, a diagnosis of syphilis was made. This diagnosis was confirmed later by a colleague in a general hospital. Leoz reports this case because of the extreme rarity of chancre in this region and the likelihood of mistaking it for a chalazion or even for a simple blepharitis. In 25,000 cases of eye diseases Leoz has only seen two like this and one chancre of the conjunctiva.

150. **Plastic Operations on the Cheek.**—Goyanes states that the most frequent causes of loss of tissue in the cheek are trauma, gangrene, and operations for the removal of carcinoma. He says that unless this loss is corrected by surgical means there is likely to be considerable resulting deformity, which generally takes the form of cicatricial contraction of the muscles of the lower jaw. In this article he reports the case of a patient aged 22, who entered the clinic of D. A. San Martin in May, 1904. According to the patient's statement, he had had a malignant pustule on the inside of the left cheek at the age of 7, which was treated with the Paquelin cautery. The resulting contraction of the muscles prevented him closing his mouth. The patient was anesthetized and a flap was formed of the skin of the neck. This flap was inverted and turned toward the buccal cavity and sutured in place with catgut. The cosmetic effect was very good and the patient was able to close his mouth and to masticate his food. Goyanes describes the operation in detail and reviews the literature on the subject. Goyanes describes the operation in detail, emphasizing the necessity for avoiding wounding Steno's duct. He also reviews the literature on the subject.

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Original Articles

THE OCULAR SYMPTOMS OF AFFECTIONS OF THE ACCESSORY SINUSES OF THE NOSE.*

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A few years ago there were but few specialists in the practice of diseases of the eye who did not combine with the treatment of affections of that organ that of diseases of the throat, nose and ear, also. By reason of the development of each of these several branches of medicine and the increased demands which have been made in consequence on the time and resources of those practicing them, the continuance of this combination of specialties has seemed no longer desirable and physicians are confining themselves more and more to but one subject. While this course is surely to be commended, and while the various departments of medicine will undoubtedly attain their highest development in this way, it should be remembered that the manner in which specialists have divided the body is purely arbitrary and that Nature draws no such lines of limitation, but that each organ has numerous connections and correlations with other organs, which every specialist and practitioner as well must thoroughly comprehend.

At the time when the custom of combining the practice of diseases of the eye with that of the nose and throat was in vogue, but little was known of the accessory sinuses of the nose and their affections, and with the exception of diseases of the lachrymal apparatus, which were clearly recognized to be most often of nasal origin, it was considered that there was but little connection between diseases of the eye and those of the nose; when the separation of the specialties was made, therefore, the divorce seemed natural, and further consideration of the nose and its diseases by the ophthalmologist was deemed unnecessary, while the rhinologist, for his part, regarded the eye as an organ with lenses and strange acting muscles in which he had no interest. Within the past few years, however, an entirely new field has been opened up by a more thorough comprehension of the anatomy and pathology of the air spaces connected with the nose, and by a better appreciation of the intimate relationship which these cells have with the orbit and its contents, so that now both ophthalmologists and rhinologists realize the need of a better understanding of this border-land between their specialties. As a consequence, numerous valuable pathologic and clinical studies have been made, which have done much to elucidate the subject and to re-associate ophthalmology and rhinology, not in the practice of a single individual, it is true, but in the more natural and better combination of two, of an ophthalmologist in conjunction with a rhinologist.

Thanks to these researches, the profession is now generally conversant with the general symptomatology of diseases of the accessory sinuses, and is familiar with the most striking, at least, of the ocular symptoms. That orbital abscess is usually secondary to disease of the sinuses, that displacement of the globe may be occasioned by encroachment on the orbit by a distended sinus, that blindness may result from an involvement of the chiasm through the roof of the cavity or by an implication of the optic nerve as it passes through its foramen in the sphenoid, as a consequence of an inflammation in the cells within that bone, are facts which are generally accepted. Beyond this point, however, the knowledge of most clinicians does not extend, and it is the purpose of this paper to call attention more generally to other less striking, though perhaps more frequent symptoms, to explain their significance, and by perfecting their symptomatology, to facilitate the diagnosis in a class which in their early stages yield readily to treatment, and are easily curable, whereas, if their nature is overlooked and the pathologic process causing them is permitted to continue, conditions may arise which may not only occasion serious inconveniences and distress in the nose, and greatly interfere with the organ of sight, but my involving the brain, may actually result in the death of the patient.

Before proceeding further, it seems desirable to make several statements in regard to diseases of the accessory sinuses of the nose, of which, it is believed, most practitioners are not cognizant. The first of these is, that very pronounced disease of any, or, indeed, of all the sinuses, may occur without occasioning any subjective nasal symptoms, and, secondly, that repeated rhinologic examinations may fail to discover pus in the nares in sinusitis, the affection of the cavity being only detected by catheterization and irrigation.

The earliest symptoms of many diseases of the accessory sinuses are ocular, and on this account the oculist is often the first to be consulted. I have no hesitation in saying that in such event, most of these symptoms are attributed to eye strain, and refraction advised. By good fortune, however, this error in diagnosis does not always work injury to the patient, for the refraction test often not only entirely relieves the symptoms, but actually cures the sublying condition, not, however, as was intended by the relief afforded the eyestrain by correcting lenses, but by the atropin which was employed to put the ciliary muscle at rest drying up the secretion in the sinuses. In many cases such desirable results do not follow, and the patient is subjected to a repeated series of examinations which fail to accomplish their purpose and permit the development of chronic conditions in the nose and sinuses, which become intractable to treatment and prolong the duration of the case indefinitely. It behooves us, therefore, as ophthalmologists, to be familiar with the symptomatology of sinus affections and to be able to detect the earliest ocular symptoms which they induce, for by so doing we may not only be of service to the rhinologist in diagnosing cases which are often obscure by reason of subjective and objective nasal signs, but also save our patients from the injury of misapplied treatment.

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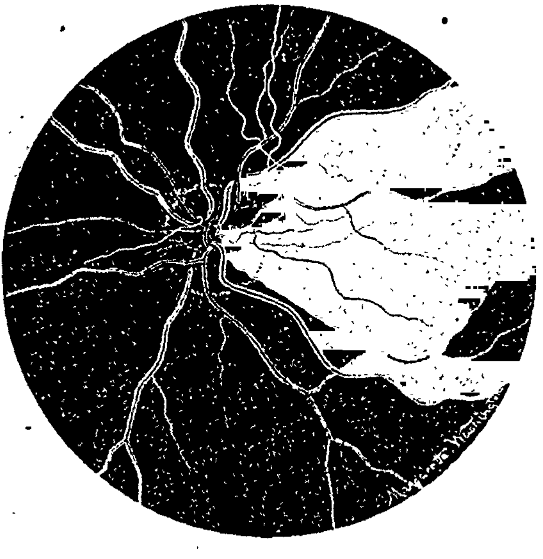
* Read in the Section on Ophthalmology of the American Medical Association, at the Fifty-sixth Annual Session, July, 1905.

SYMPTOMATOLOGY.

1. *Disturbances in Vision and the Visual Field.*—By reason of the intimate association of the optic nerve with the sphenoid bone, and as Onodi has shown, in many cases with the posterior cells of the ethmoid, this nerve is more or less implicated in the majority of active inflammatory conditions of these cavities. Indeed, were it not for the double layer of periosteum which covers the bone forming the barrier between the nerve and the sinus, and for the protection afforded by its sheath, it would be difficult to comprehend how this nerve could escape implication in any affection of the sinus, for the separating layer of bone is frequently as thin as paper and contains many dehiscences.



The involvement of the optic nerve, as a consequence of ethmoidal or sphenoidal sinusitis, may vary in degree from a simple edema to an active retrobulbar inflammation. While this latter inflammation is rare, even in cases of marked sinusitis, edematous infiltration is common, although as the change wrought in the nerve is but slight, and the symptoms which it excites are not striking, they must be searched for with some care. As a rule, the patient complains of some dimness of vision in one eye, at times of vertigo, headache and other head symptoms. When the ophthalmoscope is employed, the unaffected eye is usually found to be normal, while in the fellow eye a slight veiling of the edges of the nerve is seen, with a dilatation of the retinal veins and a choking of the lymphatics around the central vessels; in fine, the changes depicted in the sketch, which was made for me from the eye of a patient with acute sphenoiditis.[1] If the sinusitis is unchecked and retention of the contents of the cavity occurs, the nerve becomes more involved and the familiar signs of a retro-bulbar inflammation of the nerve appear.

In cases of even slight involvement of the optic nerve, the patient is usually conscious of a dimness in the affected eye, although if the vision be tested in the ordinary manner it will be found to be equally good in each eye; in other words, that the vision for form is normal. If the light on the chart be reduced, however, or if Bjerrum's test card is employed, the difference in vision between the two eyes will be at once manifest, and it will be ascertained that the dimness in the affected eye was occasioned by a diminution in the light sense, as a consequence of the edematous infiltration of the highly organized bundle of fibers which supply the macular region.

The extent of the involvement of the nerve may be further studied by the perimeter, by means of which it will often be possible to differentiate relative central and paracentral scotoma, and at times a concentric contraction of the field. If the congestion of the nerve progresses to inflammation and the conducting power of its fibers is further interfered with, then more positive defects in the visual field will appear, and it will be possible to outline absolute scotoma, both central and paracentral, and peripheral contractions in the field, in accordance with the location and the degree of involvement of the nerve. Ziem found contraction of the visual field in a large proportion of cases, especially in empyema of the antrum, and explained it by the cyclitis which he found in such cases resulting from disturbances of the circulation between the nose and the eye. Kuhnt likewise discovered concentric contraction of the field, especially for red and green. As these observations have not yet been corroborated by others, it is probable that the changes in the fields in many of the cases reported by these authors was due to neurasthenia, which may have been induced by the sinus disease.

In this connection, it should not be forgotten that optic neuritis may arise in individuals with sinusitis from other intercurrent causes, such as the abuse of tobacco or alcohol. A chief characteristic of neuritis due solely to sinus inflammation, however, is its unilateral character, for although both nerves may be affected in the optic canal by inflammation of both sphenoidal sinuses, such cases are very rare.

Tumors of the sphenoidal and ethmoid, unless they break through the walls of the sinus and involve the tissue of the nerve directly, do not, as a rule, cause disturbances of vision. As proof of this assertion, may be mentioned the cases of Baratoux, Hajek, Foucher and others, in which large sequestra of the sphenoid were exfoliated and passed through the nose, without giving rise to any defect in vision. In the cases, however, in which vision is affected by such neoplasms, Bull's statement may be accepted as authoritative, that "if an orbital tumor rapidly causes blindness and the latter starts from the temporal side of the field and leaves the region of the macula lutea unaffected to the last, and if at the same time a growth appears in the nose, it is probable that the tumor began in the sphenoidal antrum."

In addition to the various forms of implication of the optic nerve which have just been mentioned, vision may also be impaired by the mechanical obstacle offered to the proper passage of rays of light into the eye, either by reason of swollen lids, or of mucus retained in the conjunctival cul-de-sac as a consequence of lachrymal obstruction. Haze of the vitreous from uveitis may also disturb it, and, finally, imperfect focusing of the eyes, the result of interference with the function of one or more of the extraocular muscles may occasion diplopia. While there is evidence that in a very few cases of nasal and sinus disease vision may be affected, and may, for a time, be absolutely suspended, purely by reflex irritation, without anatomic cause, the clinician should be slow to attribute the blindness in such cases to a reflex, and should first carefully exclude hysteria and the possibility of the existence of retrobulbar involvement of the nerve without ophthalmoscopic signs.

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[1] Paper read before the Baltimore Ophthalmological Society; Journal of Eye, Ear and Throat Diseases, March-April, 1905.

2. *Changes in the Orbit.*—It is now generally recognized that inflammation of the orbit of endogenic metastatic origin is rare, and that most diseases of this cavity are ectogenic, being occasioned by an inflammation of one or more of the accessory sinuses of the nose. The character of the symptoms and the form of inflammation which the disease of the sinus excites in the orbit, depends first on the particular sinus or group of sinuses affected, and secondly on the nature of the inflammation in the sinus. Thus, for example, a chronic distention of the walls of a sinus (hydrops) may occasion dislocation of the globe, with the necessary attendant of more or less functional derangement of the ocular muscles, giving rise to asthenopia or actual diplopia; or the refraction of the eye may be altered by pressure, causing changes in the axis and amount of astigmatism. and, finally, disturbance in the proper canalization of tears may result from a displacement of the puncta lachrymalia, or by a lesion in Horner's muscle in the lid. In chronic cases, vision is but rarely affected, for even when there is exophthalmus, the sigmoid flexure in the optic nerve permits it to elongate and escape injury from the traction to which the displacement of the globe subjects it; in acute inflammatory processes of the orbit, on the other hand, vision is apt to be more or less involved, either from the very pronounced displacement of the globe which occurs in this class of cases, or from a direct implication of the nerve itself in the inflammatory process.

One of the earliest signs of involvement of the orbit is a change in the contour of the orbital ring. Usually this is occasioned by a distinct projection into the orbit cells, but at times the rim may be simply raised and roughened, either wholly or in part, by periostitis. In some cases of sinusitis an acute cellulitis of the orbit may develop without premonitory signs, and lead to the formation of an abscess which may point and discharge itself either externally through the skin of the lid, or in rarer cases into the antrum, nose or tear sac. In other cases, the sinusitis causes a circumscribed swelling to appear in various parts of the orbit, which may be either as hard and unyielding as bone, or may convey to the finger the impression of containing fluid.

Although it is frequently impossible by means of the ocular symptoms alone. to make a differential diagnosis of the particular sinus involved, in many cases the character of the displacement of the eyeball is of significance. Thus, disease of the frontal sinus, which is the most frequent form of sinusitis to occasion dislocation of the globe, by reason of the extreme thinness of the bone which separates its cavity from the orbit, causes the eyeball to be displaced down and out. Mucoceles formed from the ethmoid cells are circumscribed, and do not as a rule, occasion any considerable diminution in the size of the orbital cavity; when displacement of the globe does occur, however, it is usually up and out. Dislocation from a mucocele of the sphenoid cells is uncommon, as in the rare cases in which mucoceles develop in these sinuses, the anterior wall, being the thinnest. is the first to give way and the orbital cavity escapes compression. The orbit enjoys a similar immunity in hydrops of the antrum, for the inner wall of these cells is the thinnest and is the first to yield, and the nasal cavity is encroached on. Proptosis always indicates pressure from behind the globe.

The location of the pointing of the abscess may also be of value, as indicating the particular sinus which is affected, abscesses of the frontal sinus tending to perforate at the middle of the upper lid, or at the superior internal angle of the orbit, those due to ethmoiditis at its lower, inner angle. A general orbital cellulitis may be occasioned by an acute perforation of any sinus. Disease of the frontal sinus may frequently be diagnosed by redness and swelling of the skin over the sinus, and by the pain which may be elicited by pressing on the roof of the orbit in the neighborhood of the pulley of the superior oblique muscle; indeed, it is often possible to outline the area of the sinus by noting the extent of the tenderness.

Disease of the sphenoid, as a rule, manifests itself by an early involvement of the optic nerve, either by perineuritis or by pressure on the fibers of the nerve, as it passes through the optic foramen, or along the outer wall of the sinus itself. In affections of this sinus, involvement of the ocular muscles is not uncommon, and cranial symptoms of more or less severity may arise, by reason of the connection which the sphenoid has with the floor of the middle cranial fossa. These latter symptoms may also be occasioned by perforation of the posterior wall of the frontal sinus, though this accident is of rare occurrence.

Ethmoidal disease chiefly manifests itself in the intraocular and conjunctival circulatory disturbances and in the production of asthenopia by interference with the extraocular muscles.

Inflammation of the antrum of Highmore is attended by orbital symptoms less often than that of the other cavities, but it may give rise to osteo-periostitis of the roof of the cavity and cause upward dislocation of the globe, and retrobulbar optic neuritis may result from infection through the lymphatics.

While this special symptomatology may hold good in many cases, it often fails, on account of the frequent variations in the anatomy of sinuses, for, as shown by Holmes, Cryer, Onodi, Turner and others, the relationship which the sinuses bear to one another and to the orbit is not by any means constant, and, while in most cases the cavities are separate, they may communicate. Thus, Onodi has demonstrated, by means of frozen sections, that the posterior ethmoidal cells frequently aid in the formation of the optic canal, and has noted that when this anatomic relationship is present, the layer which separates the sinus from the nerve is as thin as paper and is often perforated with dehiscences. It has been found, also, not rarely, that the frontal sinus forms the inner wall of the orbit, and that abscesses of its cavity may point in the neighborhood of the lachrymal sac.

As points of practical interest in connection with the diagnosis and treatment of orbital abscess, it should be remembered that the degree of the exophthalmus often varies in sinusitis, and that it may at times disappear entirely, being dependent on the patulency of the orifices of the sinus, the amount of protrusion of the eye being naturally more marked when the size of the cavity is increased by retained secretion. This tendency for the degree of the exophthalmus to vary should be recognized, and should not lead to its being confused with the rare cases of intermittent exophthalmus which are dependent on a dilatation of the veins of the orbit. Finally, it may be remarked that even slight transient acute sinus affections may cause actual suppuration in either the periosteal or fatty tissues of the orbit; and that infection of the orbit may occur without an actual perforation of its walls, this being true not only of the very thin walls of the ethmoid cells, but also of the much thicker ones of the frontal sinus, the infection, in such cases, being carried not by way of the necrosed bone, but through the diploe, or along any one of the fine emissaries, either vascular, lymphatic or nervous.

3. Affections of the Lachrymal Apparatus.—Sinusitis may indirectly, by way of the nasal mucous membrane, be a frequent cause of disease of the lachrymal apparatus, but is the direct agent only in those rare cases where an empyema of one of the sinuses discharges itself into the sac, or, what happens more frequently, into the neighborhood of the sac, giving rise to phlegmonous inflammation of the tissues around the sac.

These prelachrymal abscesses may result from an empyema of the frontal sinus, as a consequence of an anomalous distribution of the cells, or, finally, from an abscess of the deeper parts of the orbit, the purulent matter gravitating into the region of the sac by the peculiarity of the insertion of the fascia. The differential diagnosis between these cases and true instances of lachrymal disease is often difficult, this being especially true of the class of cases described by Peters,[2] in which there are all the signs of abscess, and the sac itself appears dilated, but where the Bowman incision and the passage of probes into the nose does not release the pus, the purulent matter escaping only after the probe is withdrawn and passed horizontally into the cells forming the inner orbital wall. Peters points out that there is actually an ectasia of the sac in these cases, which is occasioned by a stoppage of the orifices of the sac by the pressure exerted externally by pus, which comes either from an empyema of the frontal or ethmoidal cells, from the maxillary antrum, or from a maxillary periostosis excited by a carious tooth.

4. Affections of the Lids.—Edema of the lids is one of the most significant symptoms of disease of the accessory sinuses, and may often be the means of calling attention to the existence of an inflammation in these cavities, the extreme thinness of the skin of the lids, and its loose attachment to the sublying parts, causing even a comparatively slight sinusitis to give rise to this condition. The puffiness is usually most marked in the upper lid and particularly on the nasal side, though the entire lid may be swollen. This edema is to be distinguished from the inflammatory swelling and thickness of the lid which results from cellulitis, as it is entirely non-inflammatory in origin, as well as in appearance, and also from the ptosis which is at times present as a result of a palsy of the levator of the lid. The swelling is usually most marked in the mornings and disappears during the day, but it is also apt to be brought on by bending the head forward. Like all other ocular symptoms of sinusitis, the edema may disappear for a time, with the discharge of secretion from the sinus, but reappears when the fluid reaccumulates and the congestion of the mucous membrane becomes greater.

A persistent blepharitis is not uncommon in association with the chronic inflammation of the conjunctiva which sinusitis sometimes excites, and yields to treatment only after the cause has been removed.

5. Affections of the Extraocular Muscles.—By reason of the juxtaposition of some of the eye muscles with the walls of the orbit, and the very close association of the nerves which supply them with the sphenoid cavity, as they pass along the outer wall of this sinus, paresis, and even paralysis of one or more of the eye muscles, may occur as a consequence of sinusitis. While complete paralysis demands an inflammatory process of considerable intensity, and is usually occasioned by a cellulitis of the apex of the orbit secondary to either an active sphenoiditis or ethmoiditis, or more rarely to antral disease, paretic conditions of the muscles may complicate comparatively mild cases of sinusitis, and may occur when the rhinological examination reveals only a congestion of the mucous membrane lining the cavity.

Chronic empyematous conditions of the sinuses rarely occasion marked muscular insufficiencies unless signs of active inflammation arise, for the distention of the walls of the sinus under such conditions is gradual and the displacement of the globe which follows is so slow that the muscles have an opportunity to adjust themselves to the changed conditions of the visual axes under which they are forced to operate. In acute cases, the paresis is occasioned either by direct inflammatory infiltration of the long, broad, flat belly of the muscles themselves, as they lie in association with the walls of the sinus, or by an involvement of the nerves supplying them as they enter the orbit. As in many of these cases the function of the muscle is but slightly interfered with, diplopia is but rarely complained of, and can be detected only by careful search in the periphery of the field by the aid of a colored glass. Under such circumstances, the diagnosis may often be facilitated by requesting the patient to indicate in which direction movement of the eyes is especially painful, as considerable distress is often excited when the eyes are rotated into the position in which fullest demand is made on the affected muscle.

As a consequence of this paretic condition of the muscles, vision is often blurred, and while, as just stated, many of the palsies are not sufficiently marked to induce diplopia, when the eyes make their ordinary excursions, the imbalance created is sufficient to confuse vision, to cause vertigo, to excite reflex gastric symptoms and to render the near use of the eyes difficult. By reason of their anatomic relationships, paralysis of the levator, of the superior rectus and superior oblique muscles, serves to indicate a probable involvement of the frontal cells; paralysis of the internal rectus, an involvement of the ethmoidal; and paralysis of the inferior rectus or inferior oblique muscles, an inflammation of the antral cells. As sphenoiditis may, however, implicate any or all of the nerves supplying these muscles, the value of differentiating the precise muscle affected, as a localizing symptom indicating the involvement of any particular sinus, is not great. Diplopia in the periphery of the field does not always indicate that a muscle has been paralyzed, for it may be induced by a slight displacement of the globe, either by exudation or by the distended wall of a sinus.

Ptosis from paralysis must not be mistaken for dropping of the lid from edema. This differentiation is not always easy, for, as in all other signs and symptoms of sinusitis, both the edema and the palsy may be transient and may disappear, only to reappear after several hours or days, or even much longer intervals. It is by reason of this transient character that palsies of extraocular muscles due to sinusitis have been confused with the palsies which occur in connection with the rare affection known as "migraine ophthalmoplegic," or recurrent oculomotor palsy. In this condition, paralysis of one or more of the eye muscles supplied by the third nerve—though muscles supplied by other nerves may be affected—occurs in connection with an attack of migraine. The attacks come on in periodical crises and recur at irregular intervals. I recently had under my care a case of transient palsy of a part of the right third nerve, which appeared in association with great pain in the eye and temple, and the occurrence of a spectrum, where the symptoms were undoubtedly induced by an acute inflammation of the ethmoidal and sphenoidal cells. Although a careful analysis of a majority of the recorded cases of migraine ophthalmoplegic indicates a probable sinus origin in the number, I do not believe that such cases are true instances of this rare form of disease, as I consider that, while the pathology of the affection is in doubt, the strongest evidence points to its being of central origin.

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[2] Zeitschrift für Augenheilkunde, 1892, ii, 2.

I am of the opinion that if many of the cases of palsy of extraocular muscles attributed to rheumatism were analyzed that an affection of a sinus would be found to be the underlying cause in many instances. Such palsies may appear after "catching cold," and are associated with more or less pain on moving the eye, and possess other characteristics which suggest the presence of an acute sinusitis.

6. *Affections of the Conjunctiva.*—In chronic disease of the sinuses, the mucous membrane of the nose is not infrequently affected, and the thickening and congestion which exist there are often transmitted to the mucous membrane which lines the lids and covers the eyeball, not only by direct continuity of structure, by way of the tear passages, but also as a consequence of the general venous and lymphatic congestion of all the parts about the eye, occasioned by the disease of the sinus. In acute cases the conjunctiva is not rarely inflamed, probably by direct infection from the mucous membrane lining the sinuses, and presents the appearance of a typical attack of catarrhal conjunctivitis. In many of the chronic cases, the follicles of the conjunctiva become enlarged, and it is the involvement of these bodies, together with the turgescence of the conjunctiva, which occasions the feeling of heaviness of the lids and aggravates the asthenopia which is so frequent a symptom of sinus disease.

7. *Affections of the Cornea.*—Disease of the accessory sinuses rarely gives rise to keratitis except indirectly, as a consequence of the exposure to which the cornea is at times subjected in extreme degrees of displacement of the globe by a distention of the walls from empyema or by cellulitis, or as a part of a panophthalmitis which may be excited by the cellulitis. Occasionally, however, herpetic-like blisters may form on the cornea, as in cases recently reported by Ellinger[3] and myself,[4] as a consequence of implication of the fifth nerve as it passes along the outer wall of the sphenoid sinus.

8. *Pupillary Changes.*—A slightly dilated pupil may at times direct the attention of the clinician to the existence of an inflammation in the posterior ethmoidal or sphenoidal sinuses, being occasioned by the optic neuritis and the consequent diminution in vision and the reduction in the light sense which accompanies the inflammation of the nerve. This dilatation increases disproportionately when the illumination is diminished and is unattended by any restriction in the play of the iris to direct or indirect light stimulus. In cases of active inflammation at the back of the orbit, the pupil may be widely dilated and fixed, from serious involvement of the third nerve.

9. *Affections of the Uveal Tract.*—When the enormous extent of mucous membrane which is spread over the nose and its sinuses is taken into consideration, and account made of its large venous and lymphatic channels and the very close and intimate association which these vessels have with the blood vessels and lymphatics of the eye, it seems extraordinary that the eye should not be the seat of active inflammatory processes in all cases of sinusitis, and that the uveal tract, especially, should not be frequently involved. And yet it would appear, despite the claims of Zeim and others, that involvement of the interior of the eyeball, either by emboli or direct infection, is very rare. The thought occurs that, in order to obviate this, there is some controlling mechanism, some peculiar arrangement, perhaps, of the vessels, of which we are as yet unaware, which protects the eye from participating in these inflammatory conditions, just as there is some subtle mechanism which controls and regulates the intraocular circulation and makes it more or less independent of that of the general system.

Zeim, Fromaget, Fish and others have recorded a number of cases of uveitis due to sinusitis, and attribute the inflammation to the general impediment in the circulation and to the irritation of the maxillary branch of the fifth nerve, occasioned by the empyema of the sinus. These authors claim to have seen marked improvement in cases of this nature follow treatment of the sinus. As yet, however, cases of uveitis from sinusitis have been recorded by but a few, and further observations are necessary before the correctness of these views can be established.

10. *Cataracts.*—Equally problematical is the claim of Zeim that cataracts may be occasioned by disease of the sinuses. This author asserts that he found chronic suppuration in the nose in many cases of opacity of the lens, and adds that in a number of cases of unripe cataract he improved vision by treating the sinuses. Kuhnt partially supports this statement, as he states that he frequently saw spoke-like opacities of the posterior cortical in antral disease, especially in young individuals, with no other changes visible in the fundus or general system. The same author has seen vitreous opacities clear up after treatment of the sinuses. He attributed both the change in the lens and vitreous to an interference with the nutrition of the ciliary body, which he considered to be of a circulatory nature. An observation of Eversbusch which is especially interesting may be cited in this connection, of a swelling of the middle turbinated body preceding a so-called sympathetic inflammation of the other eye. As a consequence of this experience, he makes it a rule to examine the nose in cases where there is any ground to suspect sympathetic trouble, enucleation of the affected eye being advised as soon as nasal symptoms arise.

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[3] Zeitsch. f. Aug. 1, p. 174.

[4] Journal of Eye, Ear and Throat Diseases, March-April, 1905.

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Dr. E. J. Brown, Minneapolis, fifteen years ago reported the case of a boy about ten years of age who had suffered from diminution of vision and very contracted fields. The boy had very large adenoids and Dr. Brown ascribed the trouble largely to that. On removal of the adenoids the fields were immediately restored to normal. The patient remained under observation for many years and is still under his care. Dr. Brown found later that the boy had sphenoid disease and the optic atrophy which resulted from that condition has persisted. Dr. Brown had a patient who came to him complaining of slight tenderness at the inner canthus, over the root of the nose and having a slight amount of astigmatism to which his trouble was at first ascribed. Correction of that, however, gave no relief. He came back, and on entering a small probe into the frontal sinus Dr. Brown caused the exudation of a small amount of pus. Removal of the head of the middle turbinate on that side gave relief to all his symptoms. Another case of similar character was relieved in that way within a few weeks.

Dr. W. H. Snyder, Toledo, called attention to the fact that a number of prepared sections show perfectly the relation of the mucous membrane after the bone has been removed and there seems to be no normal shape and size of the sinuses. In a number he prepared last spring there was no opening into the sinus. Simple probing through the nasal cavity would not bring pus in such cases.

Dr. F. W. Hilscher, Spokane, declared that he has seen a great many patients in whom symptoms of this character have been going on for a great while with more or less destruction of vision and that have been through the hands of men otherwise competent. He has had cases in which he did not discover pus at all in the sinuses but in which there was pressure between the turbinates and septum that gave rise to the same symptoms. He thinks, therefore, that we need not always expect to find pus to account for these symptoms. Just contact of the surfaces will produce them. He mentioned the case of a middle aged lady with a hypermetropic error who declared that whenever she took the glasses off she had a great deal of tinnitus.

Dr. S. D. Risley, Philadelphia, said that his attention once having been called to the important relation between certain obscure affections of the eye and the diseases of the sinuses contiguous to the orbit he was surprised to find how frequently they occur and rather reproached himself for not having observed the fact before. This condition need not cause surprise, however, when it is remembered that these sinuses all drain into the nasal cavities and the numerous circumstances in life which lead to the blocking up of the ducts and the close anatomic relationship which exists between the sinuses and the orbit are taken into consideration. Dr. Risley was struck with the statement with regard to the absence of choroidal disease in the cases observed by Dr. Posey. Dr. Risley published a group of cases some time ago in which defective vision was associated with disease of the sinuses and in all there was marked choroidal disease. He thinks, therefore, from personal observation, that choroidal disease should not be excluded as one of the associations with this form of trouble. He recently had a patient with exophthalmus, and optic neuritis of obscure origin, in whom it was only after probing the frontal sinus on that side that the diagnosis was cleared up. On opening this Dr. Risley found a large collection of pus which had escaped into the orbit and collected back of the eyeball. In another case of exophthalmus, transillumination showed the trouble to be in the maxillary antrum on that side. These conditions are varied and, therefore, in obscure cases of eye disease the study of the case should never be considered complete until we have observed, by transillumination and other means open to investigation, the condition of the accessory sinuses.

Dr. Leartus Connor, Detroit, said that it has been a habit of his for many years when any case of eye trouble was not satisfactorily disposed of within a reasonable time to investigate the sinuses. He has sometimes been reproached by his colleagues for calling attention to these matters. The expert management of these conditions in their gravest form calls for manipulation that not all ophthalmologists desire to enter into.

Dr. Edward Jackson, Denver, declared that one point of Dr. Posey's paper needs to be reiterated, and that is the allusion to the difficulty of recognizing sinus disease. Dr. Jackson has so frequently referred patients when he felt that sinus disease was the cause of the eye trouble, to expert rhinologists and had them come back with the report that there was nothing the matter. He now feels more confidence in a certain clinical association of symptoms than in the ordinary rhinologic examination and in some cases certainly the examination must go as far as the removal of considerable tissue and very careful examination before a negative reply can be accepted. A few months ago Dr. Patterson, of Colorado Springs, published a paper on the connection of sinus disease with vitreous opacities. Dr. Jackson is inclined to think this a rather common cause of uveal trouble; sometimes producing vitreous opacities and sometimes not.

Dr. J. A. Donovan, Butte, Mont., said that those who have watched adenoid children must have noticed the effect of that trouble on vision, especially on accommodative power. A diagnosis in these cases is a very important matter and he is convinced that often the symptoms are due to pressure and are much the same as those of ordinary rhinitis. The history is often the same as in rhinitis. It is almost impossible to make a diagnosis in these cases at one examination and it is not absolutely necessary, for the first treatment is not directed to the sinuses. Relieving the pressure of the anterior end of the middle turbinate often relieves the patients at least for some time.

Dr. J. A. L. Bradfield, La Crosse, Wis., said that four months ago a woman, aged 32, was referred to him as a case of glaucoma. The fields for color were contracted. Vision was 20/100 and there was history of right hemicrania. Examination of the nose showed the middle turbinate to be large and cystic and on its removal recovery was rapid. Within a week vision was almost normal.

Dr. H. Stillson, Seattle, Wash., stated that last year he published a paper on the relation between diseases of the nose and diseases of the eye. In that paper he reviewed the literature on the subject and published statistics from his own practice. The subject is a very old one, there having existed considerable literature fifty years ago, but it is a subject that has been forgotten until recently and it is only just now that the extreme importance and the extreme frequency of the diseases of the eye and brain in their relation to diseases of the nose has been realized. Ideas of the symptomatology of the diseases of the accessory cavities of the nose are still extremely hazy.

Dr. William C. Posey said, in reply to Dr. Bradfield, that the diminution in vision in the case he cited might have been due to edematous infiltration of the optic nerve. Sometimes if the vision be tested in cases of this kind it will be found to be normal, but on lowering the light the vision will be found to fall much lower than would be the case in the fellow eye, showing an interference in the conducting power of the fibers of the optic nerve. Dr. Posey agreed with Dr. Jackson that the great difficulty is in diagnosis in these cases. It is true that it is not necessary to find pus to account for these symptoms; simple congestion of the sinuses may produce them.

Malaria in British Central Africa.—Dr. H. Hearsey, principal medical officer British Central Africa, states, in the *Journal of Tropical Medicine*, that there are two forms of malarial fever in that country—the tertiary and the æstivo-autumnal. The tertian variety is by far the more common, and it frequently takes the type of a double infection. Multiple infection by tertian parasites is met with, causing the so-called irregular fever, and is the only variety of the fever which is generally resistant to quinin. Dr. Hearsey is inclined to regard hemoglobinuric fever as a "pernicious" form of the æstivo-autumnal, the absence of the parasites in the peripheral circulation being probably due to their having left the peripheral circulation for the spleen and bone marrow.

11. Refraction.—Diseases of the sinus may occasion change in the refraction directly by the pressure exerted on the globe by the wall of a dilated sinus, and it is not unlikely that in early childhood disease of the nose may indirectly alter the refractive condition. Thus, it is well known that the form of the orbit determines, in large measure, the shape of the human eyeball. As a further step, Zeim has proved by experiments on dogs and rabbits that blockage and purulent inflammation of a nares will occasion marked inflammation in the skull and side of the face, and Kuhnt has deduced that the same facial asymmetry may result in human subjects from a deviation of the septum which is consecutive to a chronic swelling of the nasal mucous membrane. Batten and Fish consider sinusitis to be an etiological factor in myopia, as a consequence of congestion and spasm of the ciliary muscle, thereby retarding its natural contraction and relaxation and reducing accommodation.

12. Asthenopia.—Asthenopia is not rare in sinusitis, and the failure of proper lenses to relieve such symptoms is explained by the fact that they originated, not in an error of refraction, but in an inflammation of a sinus. In many of the cases the asthenopia may be attributed to the conjunctivitis which sinusitis excites, but in others it is traceable to an interference with the ciliary muscle, and actual testing will show a diminution in the range of accommodation. Hoople, who has contributed an interesting article on this subject, thinks that a moderate amount of pressure or mechanical irritation of the middle turbinate and adjacent septum will temporarily impair the function not only of the ciliary muscle, but, to a more or less variable extent, that of the internal rectus muscle as well, thereby aggravating the asthenopic symptoms still more. De Schweinitz, also, has called attention to asthenopia as a consequence of intranasal disease, and thought these cases particularly interesting, because in each instance the refraction error and the faulty muscle balance were of such a character that the symptoms of which the patients complained would naturally be ascribed to these anomalies, and because the patients were, to a great extent, unaware of, or at least indifferent to, any serious or decided lesions in the naso-pharyngeal region. In an analysis of a large number of cases of asthenopia, Gradle found chronic catarrhal rhinitis, with secondary hypertrophy, or with stenosis due to deviations of or excrescences on the septum, in about 3 per cent.

13. Headache and Neuralgia.—Headache and neuralgia are rather constant symptoms of sinusitis, and, though they frequently possess no features which serve to differentiate them from similar pain due to other causes, at other times they present characteristics which are significant of sinusitis, and it is very essential that ophthalmologists should be conversant with these qualities, since the laity, who are ignorant as yet that headaches may have a nasal origin, and impute all forms of head pain to eyestrain, seek them first for relief.

The headaches of sinusitis occur usually in the morning and are characterized by continuous pain with severe exacerbations, which radiate around the orbit and within the zone of distribution of the fifth nerve; or they may take the form of a general head pain, of a facial neuralgia, or of a toothache, and may be constant or recur in severe paroxysms. Injection of the conjunctiva, lachrymation and photophobia are often present. The location of the pain is significant, for, while it may be reflected to a part of the head remote from the affected sinus, and may even be felt in the opposite side, yet its localization is generally characteristic and may enable the clinician to differentiate the particular sinus affected. Thus, neuralgia of the supraorbital nerve is very significant of frontal disease, and dental neuralgia will frequently indicate the existence of antral disease. Frontal headache is suggestive of ethmoidal and frontal disease, while occipital pain is usually caused by sphenoiditis, though disease of the frontal sinus may evidence itself in pain in that locality also. Pain in the vertex and at the back of the eyes is usually caused by sphenoiditis, though, on account of the close proximity of the fifth nerve to the lateral wall of the sinus and the nearness of the sphenopalatine ganglia, reflex pain to any part of the head may be occasioned by disease of that cavity. A distressing pain across the bridge of the nose is peculiar to ethmoid disease.

The headache of sinusitis may take the form of hemicrania, and may simulate migraine, or even the rare condition known as "migraine ophthalmoplegic." Pain is almost always present in acute affection of the sinuses and may attain great severity, while in chronic cases all suffering may be absent; in some cases, however, where secretion has been long retained and where there is a hyperostosis of the walls of the sinus as a consequence of repeated attacks of sinusitis, the suffering may be prolonged and severe. A symptom of very great value in the diagnosis of sinusitis is the sensation which is evoked by palpation of the affected areas. Thus, in frontal sinusitis exquisite pain is occasioned by palpating the forehead and the roof of the orbit at its upper, inner angle, and the same is true of the region over the antrum when that cavity is the seat of an acute inflammation.

In addition to head pain, there may be other symptoms of a general character, such as fever, evidences of cerebral irritation and congestion, neurasthenia and gastric disturbances. The increased temperature is due to absorption of pus and is generally irregular. Gastric symptoms are occasioned by swallowing some of the fetid discharge of the sinuses, and loss of appetite or a true gastritis may result. Such cerebral symptoms as malaise, inability to concentrate the mind, and actual depression, verging almost on melancholia, are observant more frequently in chronic cases. Delirium and mania betoken a state of actual involvement of the cerebral activity. When cerebral symptoms arise in sinusitis, they indicate either an involvement of the meninges without perforation of the wall of a sinus, or more usually an actual perforation, in which latter event abscess of the brain rapidly follows. Abscesses of the orbit not rarely give rise to cerebral complications, and meningitis, abscess of the brain and thrombosis of the cavernous sinus may follow.

DISCUSSION.

Dr. C. R. Holmes, Cincinnati, said that a large field is still unexplored in the relation between the accessory cavities and the eye. He has taken many fields of vision in these cases but has not found that many patients exhibited contraction. He has found that in many chronic cases there is a rise of temperature, sometimes of one or two degrees daily. He thinks this a chronic septic condition. Dr. Holmes said that in sphenoidal cases the pain is generally referred to the temple. He passed around a section from such a case, showing how easy it is for a disease in the sphenoidal cavity to invade the optic nerve and the eye. He said that this is the first case on record in which there was total blindness following trouble with the sphenoid on one side. The patient was not able to see an electric light before the eye, but after opening the sphenoid his sight was completely restored.

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ACID INTOXICATION, AND LATE POISONOUS EFFECTS OF ANESTHETICS.

HEPATIC TOXEMIA. ACUTE FATTY DEGENERATION OF THE LIVER FOLLOWING CHLOROFORM AND ETHER ANESTHESIA.*

ARTHUR DEAN BEVAN, M.D.
AND
HENRY BAIRD FAVILL, M.D.
CHICAGO.

(*Concluded from page 696.*)

Stocker,[5] in 1895, reports an operation for strangulation of pedicle of ovarian cyst. A gangrenous pedicle was found and cyst and pedicle were removed. Stocker makes no mention of the anesthetic, but in Cohn's article referred to later he mentions chloroform as the anesthetic used. Probably this statement was made to Cohn personally. Shortly after the operation icterus was noted, the patient became restless, finally became comatose and died. An acute yellow atrophy of the liver was found at autopsy. Stocker believes that the atrophy resulted from the absorption of toxins from the strangulated and gangrenous pedicle. He does not lay much stress on the anesthetic used.

Victor Bandler,[14] in 1896, reports a case of late chloroform poisoning from Wölfler's clinic.

Patient.—Male, 42 years old; glass blower by occupation; apparently in good health, but a heavy beer drinker, often taking as many as 101 daily, was operated on at noon, July 18, 1895, for an incarcerated inguinal hernia. Omentum was found in hernial sac and was resected. The operation lasted about one hour. Anesthesia was easily produced and about 80 grams of chloroform were used. The morning following the operation icterus was noted. On the second day the icterus had increased and bile pigment was found in the urine. Patient was quiet, no pain in abdomen or wound; tongue moist; some headache and a striking apathy. Temperature 38.2 C., pulse 92. On the third day icterus was marked; urine brownish color; some blood in stool; urine rich in bile pigment; albumin, and in the sediment yellowish, granular and hyaline casts. There was some pain in the liver region, but the liver apparently was not enlarged. During the day icterus increased and little urine was passed. During the evening the patient suddenly became delirious, attempted to get out of bed and was restless.

On the following morning the patient was unconscious: there were hemorrhages into the abdominal wall, but the wound was clean. Leucin and tyrosin were found in the urine, and a diagnosis of acute yellow atrophy was made. The patient became comatose. There were petechiæ in the skin. Terminal rise of temperature to 40 C. Death occurred four days after operation.

Anatomic Diagnosis.—Acute yellow atrophy of the liver; icterus; multiple hemorrhages; fatty degeneration of the heart; chronic Bright's disease.

Erlach,[17] in 1896, in a personal communication to Bandler,[14] reports the death of a patient from acute yellow atrophy of the liver, following the use of Billroth's mixture; total extirpation of the uterus was done for fibroids. The predisposing cause was probably gastritis and catarrhal icterus. At the autopsy acute yellow and red atrophy of the liver was found.

Marthen,[18] in 1896, reports the following clinical history:

Patient.—Woman, 34, insane. The roots of fourteen carious teeth were removed under chloroform anesthesia. Anesthesia lasted about forty minutes, and about 70 c.c. of chloroform were used. Patient vomited frequently after anesthetic. The day following operation some icterus of the face and back was noted. Vomiting continued, and on the third day the patient became restless, uttered piercing cries and attempted to leave bed. There was convulsive tic of face and upper extremities. Pupils, maximum dilatation. Cheyne-Stokes respiration. Death.

Anatomic Diagnosis.—Fatty degeneration of heart muscle and kidneys. Acute fatty degeneration of liver.

W. Mintz,[19] in 1900, reports the following case:

Patient.—Male, 40 years old, heavy drinker, always well previous to present trouble. Operation, opening of appendiceal abscess and removal of gangrenous appendix. During evening of second day patient vomited three times; the vomitus contained blood. Vomiting persisted on the third day, accompanied by singultus. Slight jaundice, which increased in intensity. Death occurred seven days after operation, eighteen days after beginning of disease.

Anatomic Findings.—Erosions in duodenum and along lesser curvature, corresponding to which were numerous obliterated *arterial lumina.*

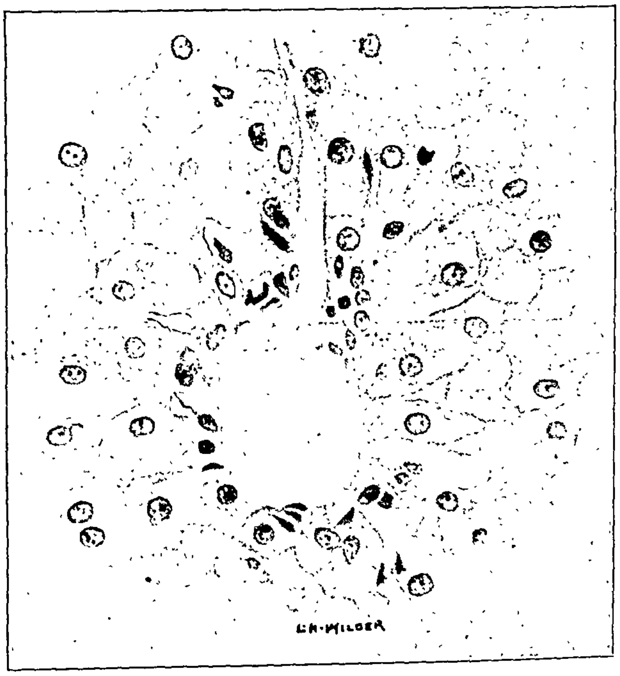

Fig. 1.—Section of liver of healthy rabbit, showing nuclear and cytoplasmic characteristics. Stained with hematoxylin and eosin.

Anesthetic is not mentioned. The author speaks of direct relation to epityphilitis.

Cohn,[4] in 1902, reports a case of protracted chloroform action resulting fatally.

Patient.—A woman, aged 21, with no apparent predisposing cause, was operated on Jan. 3, 1902, for the removal of diseased uterine adnexa. The patient took cloroform well, about 175 grams being used. During the day the patient was excited and restless, and gained complete consciousness only once. There was slight vomiting after anesthesia.

January 4: She had a sleepless night, tossed about in bed, and finally was restrained by nurse. The evening temperature, 38 C.

January 5: Patient slept a great deal, talked with nurse at times, and was conscious.

January 6: Jaundice was noted. At half-past 8 the patient suddenly became very restless and delirious. She tossed about

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* Read in the Section on Surgery and Anatomy of the American Medical Association, at the Fifty-sixth Annual Session, July, 1905.

17. Erlach: Personal communication to Bandler.

18. Martin, G.: "Ueber todtliche *Chloroform nachwirkung,*" *Berl. klin. Wochft.*, 1896, xxxiii, p. 204.

19. Mintz, W.: "Akute gelbe Leber atrophie als Komplication v. Epityphlitis zugleich ein Beitrag. z. Frage der postoperativen *Magen-Duodenal Blutung.*" Mittell. aus den Grenzfiebeit der Med., 1900, vi, p. 645.

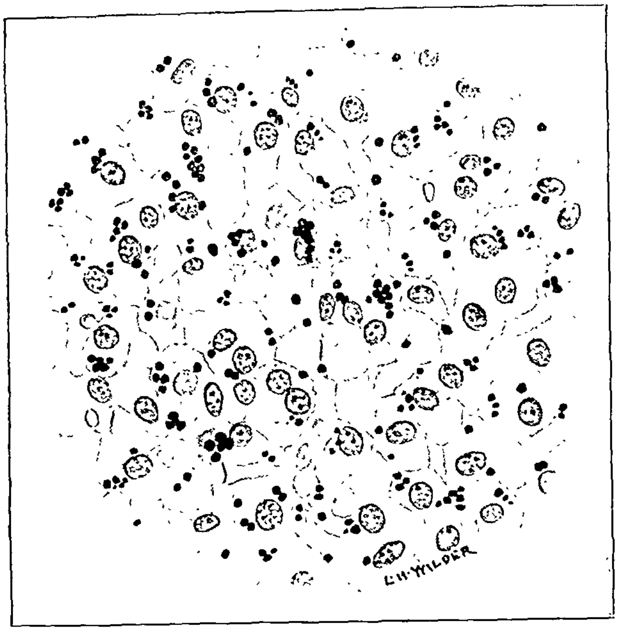

Fig. 2.—Section of liver of healthy rabbit, showing the amount and distribution of fat in the liver cells. Fat globules are represented by the heavy black. Drawing made from a frozen section, stained with Sudan III and Delafield's hematoxylin.

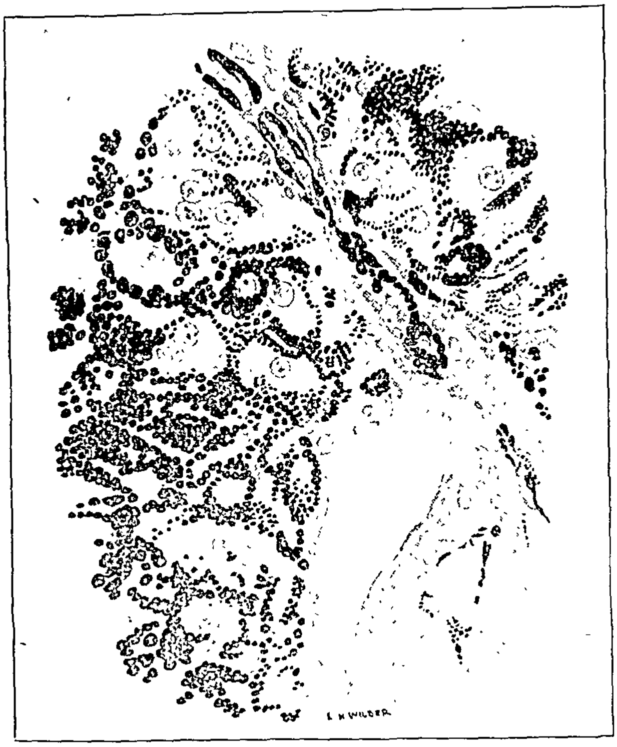

Fig. 3.—Section of liver of a rabbit, which had been chloroformed for two hours and killed forty-eight hours later. The rabbit became drowsy about twenty-four hours after the anesthetic, refused food and was partially paralyzed in the forelegs. The liver presented the typical appearance of fatty degeneration. Drawing made from a frozen section stained with Sudan III and Delafield's hematoxylin. Fat is represented by the heavy black. Fatty degeneration of the liver cells is marked; the fat droplets are grouped about the periphery of the liver cell and are separated from the nucleus by a clear, unstainable, degenerating cytoplasm. The fatty changes are found throughout the lobule, and are not confined to any particular zone.

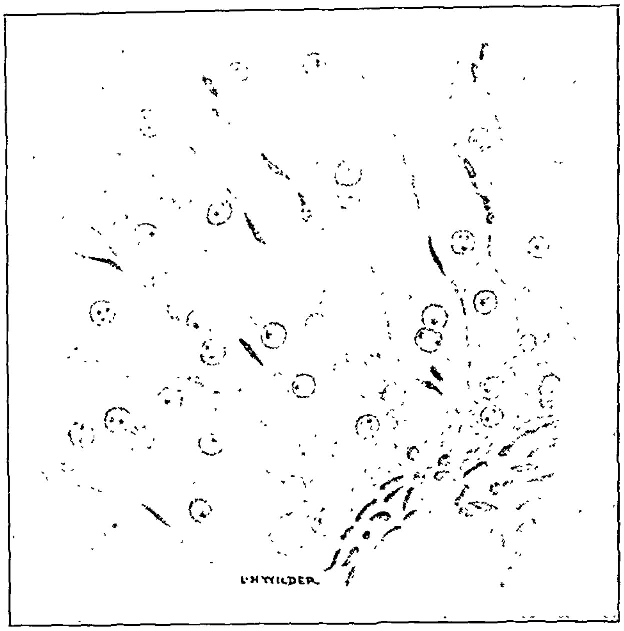

Fig. 4.—Section from liver of rabbit, which had been chloroformed for two hours and killed forty-eight hours later, stained with hematoxylin and eosin. The liver cells are swollen and vacuolated, the fat droplets having been dissolved out during the process of embedding. The nuclei stain poorly, the chromatin network having been partially destroyed. In some cells karyorrhexis is well advanced.

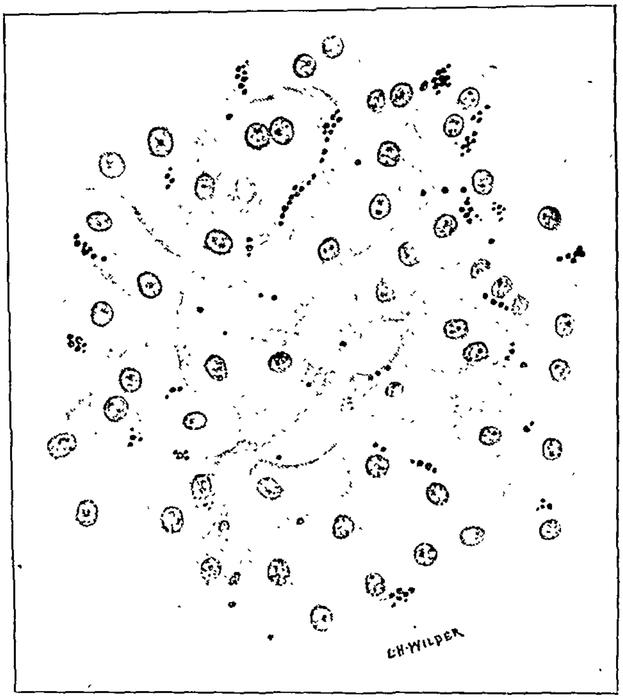

Fig. 5.—Section of liver from a rabbit, which had been etherized for two hours and killed seventy-two hours later. The animal was not sick after the anesthetic. The liver was macroscopically normal. The fat does not exceed in amount the fat found normally in the liver. It should be noted, however, that the greater part of the fat is intercellular, whereas in the normal liver it is intracellular.

Supplement to
The Journal of the American Medical Association.

Illustrating Article by Drs. Bevan and Favill.

ACID INTOXICATION, AND LATE POISONOUS EFFECTS OF ANESTHETICS.

HEPATIC TOXEMIA. ACUTE FATTY DEGENERATION OF THE LIVER FOLLOWING CHLOROFORM AND ETHER ANESTHESIA.*

ARTHUR DEAN BEVAN, M.D.
AND
HENRY BAIRD FAVILL, M.D.
CHICAGO.

(*Concluded from page 696.*)

Stocker,[5] in 1895, reports an operation for strangulation of pedicle of ovarian cyst. A gangrenous pedicle was found and cyst and pedicle were removed. Stocker makes no mention of the anesthetic, but in Cohn's article referred to later he mentions chloroform as the anesthetic used. Probably this statement was made to Cohn personally. Shortly after the operation icterus was noted, the patient became restless, finally became comatose and died. An acute yellow atrophy of the liver was found at autopsy. Stocker believes that the atrophy resulted from the absorption of toxins from the strangulated and gangrenous pedicle. He does not lay much stress on the anesthetic used.

Victor Bandler,[14] in 1896, reports a case of late chloroform poisoning from Wölfler's clinic.

Patient.—Male, 42 years old; glass blower by occupation; apparently in good health, but a heavy beer drinker, often taking as many as 101 daily, was operated on at noon, July 18, 1895, for an incarcerated inguinal hernia. Omentum was found in hernial sac and was resected. The operation lasted about one hour. Anesthesia was easily produced and about 80 grams of chloroform were used. The morning following the operation icterus was noted. On the second day the icterus had increased and bile pigment was found in the urine. Patient was quiet, no pain in abdomen or wound; tongue moist; some headache and a striking apathy. Temperature 38.2 C., pulse 92. On the third day icterus was marked; urine brownish color; some blood in stool; urine rich in bile pigment; albumin, and in the sediment yellowish, granular and hyaline casts. There was some pain in the liver region, but the liver apparently was not enlarged. During the day icterus increased and little urine was passed. During the evening the patient suddenly became delirious, attempted to get out of bed and was restless.

On the following morning the patient was unconscious: there were hemorrhages into the abdominal wall, but the wound was clean. Leucin and tyrosin were found in the urine, and a diagnosis of acute yellow atrophy was made. The patient became comatose. There were petechiæ in the skin. Terminal rise of temperature to 40 C. Death occurred four days after operation.

Anatomic Diagnosis.—Acute yellow atrophy of the liver; icterus; multiple hemorrhages; fatty degeneration of the heart; chronic Bright's disease.

Erlach,[17] in 1896, in a personal communication to Bandler,[14] reports the death of a patient from acute yellow atrophy of the liver, following the use of Billroth's mixture; total extirpation of the uterus was done for fibroids. The predisposing cause was probably gastritis and catarrhal icterus. At the autopsy acute yellow and red atrophy of the liver was found.

Marthen,[18] in 1896, reports the following clinical history:

Patient.—Woman, 34, insane. The roots of fourteen carious teeth were removed under chloroform anesthesia. Anesthesia lasted about forty minutes, and about 70 c.c. of chloroform were used. Patient vomited frequently after anesthetic. The day following operation some icterus of the face and back was noted. Vomiting continued, and on the third day the patient became restless, uttered piercing cries and attempted to leave bed. There was convulsive tic of face and upper extremities. Pupils, maximum dilatation. Cheyne-Stokes respiration. Death.

Anatomic Diagnosis.—Fatty degeneration of heart muscle and kidneys. Acute fatty degeneration of liver.

W. Mintz,[19] in 1900, reports the following case:

Patient.—Male, 40 years old, heavy drinker, always well previous to present trouble. Operation, opening of appendiceal abscess and removal of gangrenous appendix. During evening of second day patient vomited three times; the vomitus contained blood. Vomiting persisted on the third day, accompanied by singultus. Slight jaundice, which increased in intensity. Death occurred seven days after operation, eighteen days after beginning of disease.

Anatomic Findings.—Erosions in duodenum and along lesser curvature, corresponding to which were numerous obliterated arterial lumina.

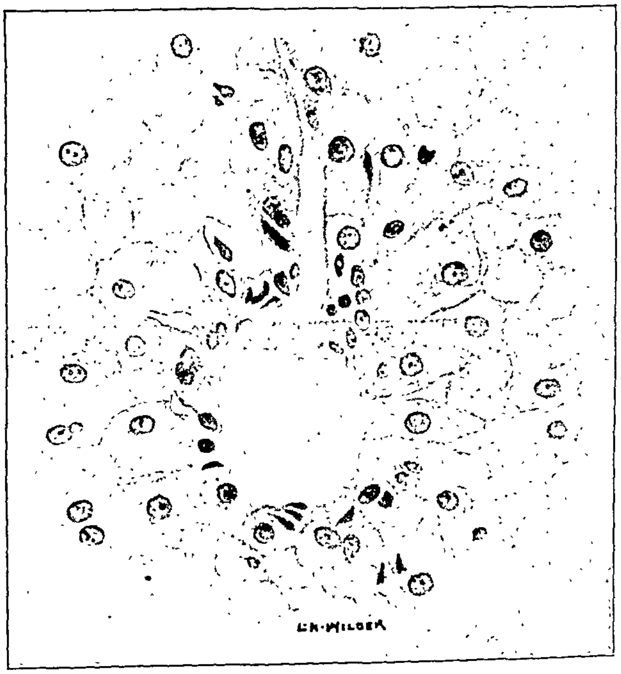

Fig. 1.—Section of liver of healthy rabbit, showing nuclear and cytoplasmic characteristics. Stained with hematoxylin and eosin.

Anesthetic is not mentioned. The author speaks of direct relation to epityphilitis.

Cohn,[4] in 1902, reports a case of protracted chloroform action resulting fatally.

Patient.—A woman, aged 21, with no apparent predisposing cause, was operated on Jan. 3, 1902, for the removal of diseased uterine adnexa. The patient took cloroform well, about 175 grams being used. During the day the patient was excited and restless, and gained complete consciousness only once. There was slight vomiting after anesthesia.

January 4: She had a sleepless night, tossed about in bed, and finally was restrained by nurse. The evening temperature, 38 C.

January 5: Patient slept a great deal, talked with nurse at times, and was conscious.

January 6: Jaundice was noted. At half-past 8 the patient suddenly became very restless and delirious. She tossed about

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* Read in the Section on Surgery and Anatomy of the American Medical Association, at the Fifty-sixth Annual Session, July, 1905.

[17] Erlach: Personal communication to Bandler.

[18] Martin, G.: "Ueber todtliche Chloroform nachwirkung," Berl. klin. Wochft., 1896, xxxiii, p. 204.

[19] Mintz, W.: "Akute gelbe Leber atrophie als Komplication v. Epityphlitis zugleich ein Beitrag z. Frage der postoperativen Magen-Duodenal Blutung." Mittell. aus den Grenzfiebeit der Med., 1900, vi, p. 645.

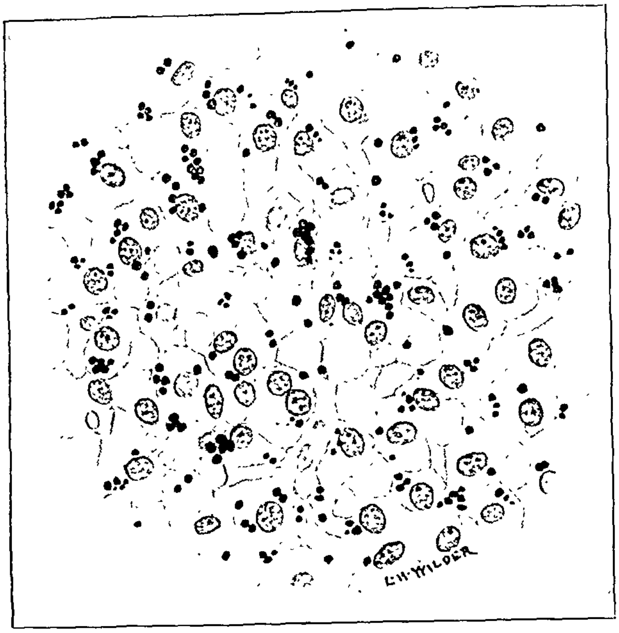

Fig. 2.—Section of liver of healthy rabbit, showing the amount and distribution of fat in the liver cells. Fat globules are represented by the heavy black. Drawing made from a frozen section, stained with Sudan III and Delafield's hematoxylin.

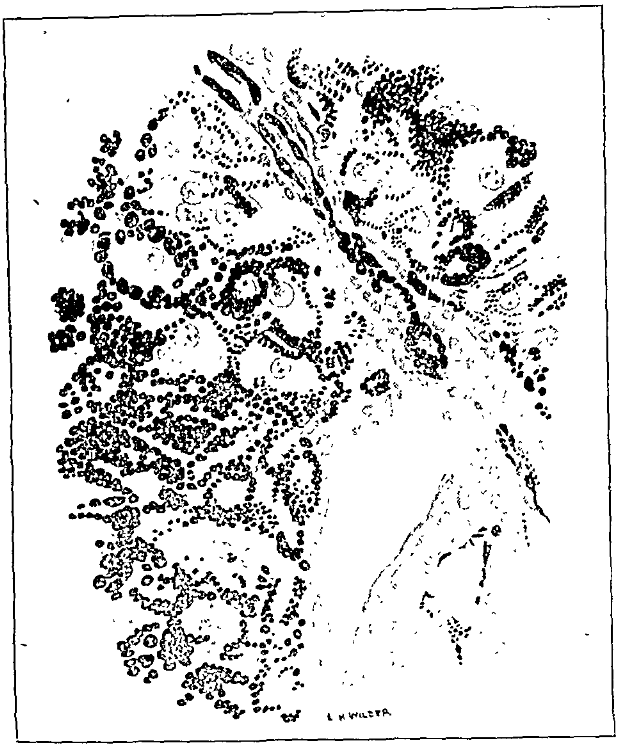

Fig. 3.—Section of liver of a rabbit, which had been chloroformed for two hours and killed forty-eight hours later. The rabbit became drowsy about twenty-four hours after the anesthetic, refused food and was partially paralyzed in the forelegs. The liver presented the typical appearance of fatty degeneration. Drawing made from a frozen section stained with Sudan III and Delafield's hematoxylin. Fat is represented by the heavy black. Fatty degeneration of the liver cells is marked; the fat droplets are grouped about the periphery of the liver cell and are separated from the nucleus by a clear, unstainable, degenerating cytoplasm. The fatty changes are found throughout the lobule, and are not confined to any particular zone.

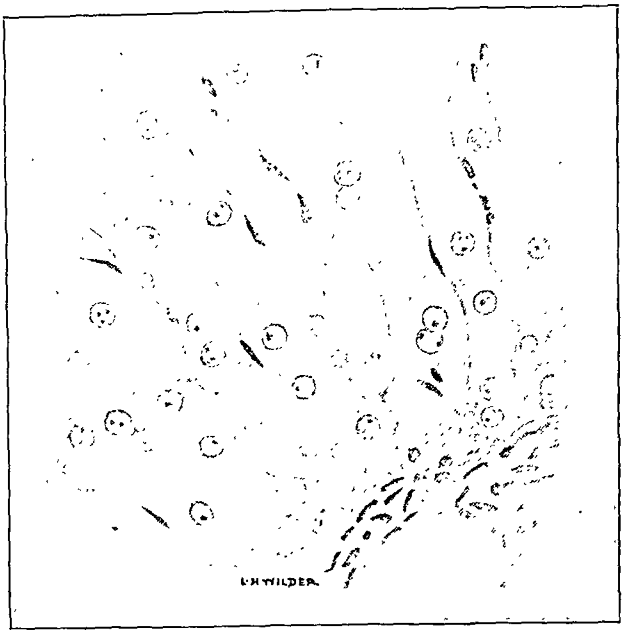

Fig. 4.—Section from liver of rabbit, which had been chloroformed for two hours and killed forty-eight hours later, stained with hematoxylin and eosin. The liver cells are swollen and vacuolated, the fat droplets having been dissolved out during the process of embedding. The nuclei stain poorly, the chromatin network having been partially destroyed. In some cells karyorrhexis is well advanced.

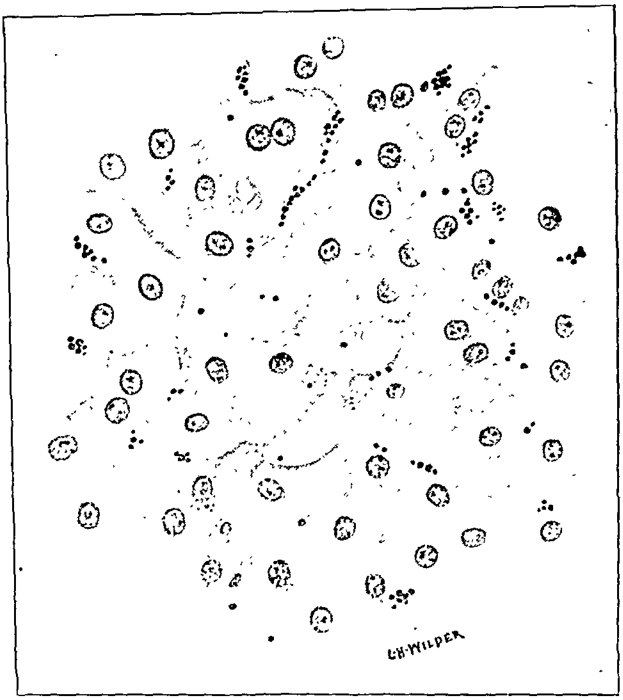

Fig. 5.—Section of liver from a rabbit, which had been etherized for two hours and killed seventy-two hours later. The animal was not sick after the anesthetic. The liver was macroscopically normal. The fat does not exceed in amount the fat found normally in the liver. It should be noted, however, that the greater part of the fat is intercellular, whereas in the normal liver it is intracellular.

SUPPLEMENT TO
THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

ILLUSTRATING ARTICLE BY DRS. BEVAN AND FAVILL.

in bed and cried with fright, and had to be forcibly restrained. Sleep was induced by chloral and morphin.

January 7: The patient became deeply comatose. Face reddish, cyanosis, conjunctivæ icteric; pulse small and frequent, 150. Death occurred at 8:30 p. m.

Anatomic Diagnosis.—Cloudy swelling of heart, liver and kidneys. Icteric nutmeg liver.

G. E. Brewer,[2] in 1902, reports the following case:

Patient.—S. S., schoolboy, aged 12, was admitted to Roosevelt Hospital, April 29, 1901. Two days previously he had been seized with acute abdominal pain, accompanied by nausea and vomiting. There was slight elevation of temperature and increased pulse rate. Previous health was good.

Operation.—April 29, 1901: A perforated gangrenous appendix was found in a small abscess and removed. Anesthesia produced by chloroform lasted about twenty-five minutes. The second night after the operation was a comfortable one, and the following morning temperature was normal, pulse 76. During the day the temperature remained normal and pulse did not rise above 80.

Postoperative History.—The following night (third) he slept well until shortly after midnight, when he awakened suddenly without apparent cause and uttered an agonizing, piercing shriek expressive of terror. He failed to recognize people about him; he soon fell asleep, and rested quietly until morning. He was somnolent on the following morning. When aroused he would cry out and appear much frightened. Temperature 98.5, pulse 74. He was seen by Dr. Brewer at about 11 o'clock, and when awakened he screamed so loudly that he could be heard over the whole building and was the picture of abject terror. The paroxysms lasted from a few seconds to two or three minutes. There were no symptoms on part of nervous system. Consultation was held. Peculiar sweetish odor of breath was noted. At 6 p. m. temperature was normal; pulse during day was 80. Acetone and diacetic acid were found in the urine.

At 8 p. m., 400 centimeters of blood were withdrawn from median basilic vein, and 1,000 c.cm. of normal salt solution, to which were added 15 grams of chemically pure sodium bicarbonate were injected. The paroxysms of screaming became shorter and occurred less frequently. Circulation in extremities was slower; face became slightly cyanotic and eyes expressionless. Between 4 and 5 a. m. the condition began to grow worse. Respirations became shallow and rapid. The pulse was weaker; temperature rose rapidly to 103 F., and deep and progressive coma developed. Death occurred at 11 a. m. No autopsy.

Ballin,[20] 1905: Dec. 9, 1901: Appendectomy was done on a young man, aged 20 years; lead poisoning was a possible predisposing cause, under chloroform anesthesia. A small amount of chloroform was used.

Dec. 10, 1901, 9 a. m.: Temperature normal, pulse 100, patient restless and nauseated. Urine was drawn by catheter.

December 11: There was slight jaundice of skin and conjunctiva and slight vomiting several times. He was somewhat restless in the afternoon. Temperature 97.6 F., pulse 88. The jaundice increased; patient was restless and slightly delirious in the evening. There was vomiting of greenish fluid at 5 p. m.

December 13, 8 a. m.: Temperature 98 F., pulse 86; patient was delirious all night and was noisy; he slept at short intervals; he was apparently in deep coma at these times. He threw his arms and legs about wildly and was violent. By this time he presented the classical symptoms of acute yellow atrophy.

December 14: Temperature 100.4, pulse 108. Delirium and coma seemed to increase. Gradually there was subsidence of symptoms; patient was discharged from hospital on February 11.

Ballin discusses in this paper the possible relation to chloroform anesthesia and to toxins from diseased appendix.

Guthrie,[21] in 1903, reported the following cases:

CASE 1.—Woman, aged 41, was admitted to Glasgow Royal Infirmary on October 29, 1897. She had a tuberculous knee, from which she had suffered for the past twenty-seven years. During the past four years she had had occasional attacks of gallstone colic. Otherwise her health was good. The limb was put in carbolic acid dressings preparatory to operation. After twenty-four hours the patient vomited bile-stained matter; urine was greenish, becoming darker on standing. The dressings were immediately removed, but the patient remained seriously ill for eight days. After subsidence of vomiting, she remained well for nearly three weeks; urine was free from albumin and casts.

November 24: The knee was excised under chloroform. During the night, vomiting commenced and increased; nothing would stop it. Afternoon of November 26 patient was drowsy. At night she could not be aroused to answer questions. Urine was passed in small quantities and contained casts. She died comatose, November 27, three days after operation.

Autopsy.—Liver was markedly fatty. Heart was small, but musculature healthy. Kidneys were fatty, with some interstitial nephritis. Spleen was normal.

CASE 2.—Boy, aged 3, admitted under care of Mr. Burghard, for webbed fingers and toes, April 6, 1903. Patient was healthy looking and well nourished. Described as "dyspeptic," subject to "bilious attacks," "night terrors," and very passionate.

Operation.—April 7, at 3 p. m., webs between second and third fingers of each hand were divided under chloroform. Operation lasted twenty minutes. Chloroform was taken well.

Postoperative History.—On April 9 patient was slightly sick, drowsy and apathetic. On the afternoon of the same day, he became slightly, but distinctly, jaundiced. In the evening, he began to scream loudly, the screaming occurring in fits and paroxysms; he was seemingly semi-conscious. There was possible slight tenderness in liver region. Liver was slightly enlarged. Urine was passed involuntarily. Screams of shrill meningitic type continued until after 3 a. m., when they ceased after administration of chloral and bromids.

April 10: He lay in a practically unconscious state. Jaundice was about the same as on previous day. Liver could be felt two fingers' breadth below the ribs. Leucin and tyrosin were not found in urine. Toward night he became comatose. The conjunctival reflexes were lost. There was slight lateral nystagmus, especially in the left eye, with a tendency in both eyes to turn upward. Respirations were loud, quick, but not typical Cheyne-Stokes. Death occurred at 2:45 a. m. on April 11; 84 hours after the operation. Temperature was between 97 and normal throughout.

Autopsy.—Liver weighed 1 pound 12 ounces; pale and fawn-colored.

Microscopic Examination.—Osmic acid preparations showed a ring of fatty cells, occupying the outer zone of each lobule; intermediate zone, a few fatty cells; none in inner zone. Cloudy swelling and fatty degeneration. Small petechiæ were found in pleuræ. Brain, meninges, kidneys, suprarenal capsules, spleen and intestines were normal.

CASE 3.—Healthy-looking female child, aged 1 year and 10 months, was admitted to the Children's Hospital, Paddington-Green, under care of Mr. Burghard, February 24, 1898. Partial removal of nevus had been made in June of previous year. At 10 a. m., February 25, Mr. Burghard removed remaining portion of nevus under chloroform. The operation lasted twenty minutes. Carbolic acid was used only in strong mixture to purify skin at beginning of operation. Wound was dressed with cyanid gauze.

Postoperative History.—At 4:30 p. m. the child was slightly nauseated. Temperature, 9 p. m., 102. Child slept well during night; at 5 a. m. she awoke, restless and nauseated; at 7:15 a. m. she was restless, somewhat cyanosed, conscious, Pulse was feeble and rose to 136 and 160. At 11 a. m. the child vomited dark colored matter. At noon she became unconscious, though still restless and thirsty. At 2 p. m. there was a slight general convulsion. Saline injection was given. Death occurred twenty-eight hours after operation. Pulse was 160, temperature 106 at time of death.

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[20] Ballin, Max: "Acute Yellow Atrophy of the Liver as a Sequela to Appendectomy." Ann. of Surg., 1903, xxxvii, p. 362.

[21] Guthrie, L. G.: "Some Fatal Effects of Chloroform on Children Suffering from a Peculiar Fatty Condition of the Liver." Lancet, 1903, II, p. 10.

Autopsy.—Liver weighed 13 ounces. Slight increase of fibrous tissue along portal canals. It was preserved in alcohol, preventing good demonstration of fat, but is reported as "undoubtedly fatty in places."

Case 4.—Girl, aged 3. Dr. Lack opened postpharyngeal abscess from behind sternomastoid. Chloroform was taken well. The operation lasted from ten to fifteen minutes. Twenty-four hours later the child appeared well, but was often nauseated. Temperature was 102 F. At 8 p. m., thirty-three hours after operation, the child had a "cold fit;" there was some shivering and extremities were blue and cold. Temperature rose to 107. Death occurred one-half hour later. Carbolic acid was used at operation, but no carboluria had developed. No autopsy was permitted.

E. G. Brackett,[3] in 1904, J. S. Stone and H. C. Low reported the following:

Case 1.—M. J. B., girl, aged 8, entered Children's Hospital October 6, 1903. There was extensive infantile paralysis involving most of the muscles of both lower extremities. During preceding year frequent attacks of severe and persistent vomiting, accompanied by marked prostration and rapid pulse, closely resembling condition existing first day of fatal one, may have been predisposing causes.

Operation and Postoperative History.—Oct. 10, 1903: The child was etherized and three tendons were transplanted. She took ether badly, was cyanotic and had rapid pulse. During recovery from ether the child vomited and then seemed comfortable and in good condition for twelve hours. She suddenly began to vomit; the pulse became rapid; rose to 190, and temperature to 106. Vomiting lasted about thirty hours. The child passed from restlessness into a delirious stupor, and died forty-two hours after operation, thirty hours after vomiting began. No test was made for acetone and diacetic acid in this case, but it was later recalled that the breath had a peculiar sweetish odor.

Autopsy.—Liver weighed 510 grams. Surface was smooth and irregularly mottled with yellowish areas from 3 to 5 cm. in diameter, scattered over a reddish-brown surface. Cross-section, yellowish-brown in color. Microscopically, sections of liver, spleen, kidneys and lung were negative.

Case 2.—Girl, aged 5½ years, entered Children's Hospital, November 16, 1903. Infantile paralysis, four years before, and contracted fasciæ, causing permanent flexion of the thighs. A slight trace of diacetic acid was present in urine.

November 17, 1903: Fasciæ at upper and outer part of each thigh were divided, open method. Operation was short, little ether being used.

Postoperative History.—At 11 p. m., thirteen hours after operation, she vomited a small amount of dark brown thin fluid; during the next ten hours she vomited several times. She slept in all three hours. When awake she was very restless and noisy. Twenty-four hours after operation the condition of patient was very poor. Extremities were cold; pulse weak and rapid; expression anxious; sweet odor of breath noticeable during morning. Twenty-six hours after operation 5 ounces of urine were passed, containing large traces of acetone and diacetic acid. Thirty hours after operation the child became delirious. Pulse was very weak. Thirty-six hours after operation, 12 ounces of 2 per cent. bicarbonate solution were given intravenously; also under each breast. On second morning following operation, child became dull and apathetic; she gradually lost consciousness and coma supervened. Odor of breath became more pronounced. Cyanosis was marked during last few hours. Temperature after operation remained at about 102.

Autopsy.—Liver surface smooth, and pale yellow; in places reddish color. Cut surface, pale yellow; oily and homogeneous. Fresh examination showed marked fatty infiltration. Kidneys, fatty infiltration.

Case 3.—Girl, aged 4, entered Children's Hospital, February 15, 1904, with double congenital dislocation of both hips. Right hip had been reduced five months previously under ether. Urine was acid, free from sugar and albumin. Three days after entrance to hospital patient was etherized, and in manipulating both femurs were broken.

Postoperative History.—Child was under ether between one-half and three-quarters of an hour. She recovered from the ether as usual. In the evening, pulse was weak and rose to 150. Twenty hours after operation, pulse became suddenly weak and rapid; the color was poor. The child seemed dull; no vomiting. Breath was sweet. Acetone and diacetic acid present in urine. During the day, the child grew rapidly worse and sank into restless coma; lips blue in spite of oxygen; drawn expression of face; eyes became sunken. At 6 p. m. salt solution was injected under both pectorals, followed by marked improvement in pulse and color. Temperature was 104; at 9:30 p. m. the child was able to recognize her mother. At midnight the condition grew rapidly worse. Temperature rose to 106 at 3 a. m. Coma returned. Child died at 5:30 a. m., twenty-three hours after first collapse, forty-three hours after operation.

Autopsy.—Liver large, pale yellow, with a pink color in places. Cut surface pale yellow; lobules indistinctly marked. Knife edge scraped up fatty material. Tissue broke easily on pressure. Kidney, considerable fat in epithelium of convoluted tubules.

Kelly,[22] in 1905, reported the following case:

Patient.—Schoolboy, aged 9. Service of Dr. H. W. Cushing. Operation, May 16, 1904, for appendicitis. Ether anesthesia. The condition of the appendix did not account for the patient's serious condition, so the abdomen was explored and nothing found. A sterile gauze wick was inserted into pelvis and to stump of appendix, and abdominal wound was closed. An area about 1 centimeter in diameter of slight edema and redness was found about 2 cm. from the tip of the appendix. The appendix contained a grape seed. The patient's general condition so grave that 250 c.c. (1-50,000) adrenalin salt solution were given. He was restless after operation. Urine was negative before operation.

Postoperative History.—May 18: Sweetish odor of breath continues. Patient mildly delirious and drowsy. Urine contains acetone and diacetic acid. Vomiting continues.

May 22: General condition markedly improved. Still occasional vomiting. Acetone and diacetic acid present in urine. No delirium, but patient is drowsy and resists daily dressing.

May 26: Occasional vomiting. Expression dull. Patient sleeps most of time; refuses everything by mouth. Acetone and diacetic acid in urine. Patient slowly failed, and in spite of active stimulation died at 11:05 p. m.

No autopsy. Examination of liver during operation was negative.

REVIEW OF SYMPTOMS.

The symptoms appear in from 10 to 150 hours after the anesthesia. The average of Guthrie's first series of ten cases being 37½ hours.

In Brewer's case, a boy of 12, following an operation for appendicitis lasting twenty-five minutes under chloroform, nothing unusual was noted immediately after. The second night following the operation was a comfortable one. He slept six hours; the next day his pulse was 76, and temperature normal. He was cheerful, happy, had no pain, and was hungry.

The following night, he slept quietly until shortly after midnight, when he suddenly awakened and without any apparent cause uttered a piercing shriek, which alarmed his nurse and mother. He continued to scream for several minutes, looked wildly about him, and apparently failed to recognize those around him. A few moments later he fell asleep and rested quietly until morning. The following morning he was distinctly somnolent, when aroused would cry out and appear frightened, but could easily be soothed by his mother.

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[22] Kelly, Jas. A.: "Acid Intoxication: Its Significance in Surgical Conditions," 1905, xii, p. 161.

At 11 in the morning he awoke and again uttered an agonized cry. He continued to scream, so that he could be heard all over the building. Delirium was followed by coma. The face seemed slightly cyanosed; acetone and diacetic acid were found in the urine and blood. Death. No autopsy.

Brewer discusses the case and comes to the conclusion that it was an autointoxication, and considers ptomain poisoning, uremia and acetonemia, and concludes that acetonemia was the cause of death.

Brewer describes the three characteristic symptoms, as sweetish odor of the breath, delirium and rapidly fatal coma. Another symptom is that of air hunger, described by Kussmaul, evidenced by deep breathing and a bright red color of the mucous membranes (this was noted in our case), Cheyne-Stokes respiration and cold extremities.

Brackett, Stone and Low describe the following symptoms: Vomiting associated with collapse; a very weak and rapid pulse; an absence of fever until just before death; cyanosis in the fatal cases, causing extreme dyspnea; apathy and stupor alternating with periods of restlessness, at first, but in the fatal cases gradually deepening into coma and death; and the presence of acetone in the breath and urine.

Stocker describes the symptoms in his case as follows: The morning of the second day after the operation the patient, who had been doing well, became very restless, threw herself about in the bed, but mind was at first clear. The next day coma and death.

Guthrie says of symptoms:

> After recovery from the immediate effects of the chloroform there was usually an interval of a few hours at the end of which the child would begin to utter piercing cries at short intervals, disturbing the whole building by its shrieks, grinding its teeth, tossing, struggling and requiring constant attention lest dressings be torn off or fractured bones displaced. The pupils were often dilated, sometimes unequally, the face being flushed or pale, with a look of wild terror and anxiety. Consciousness was sometimes lost early and never regained; sometimes there were intervals in which the child would be dull and apathetic, but would answer rationally when addressed, and usually deny being in pain. Vomiting was a marked feature in all but one case. It was copious, frequent, persistent and the vomited matter sooner or later almost exactly resembled the dregs of beef tea.

In eight out of ten cases, the symptoms of a marked cerebral type were present, resembling maniacal delirium.

Temperature (10 cases): In 1 case it rose to 103 four hours after operation, and remained there throughout. In 2 cases it rose to 103.2, and 104.6, just before death. In 1 case it remained between 98 and 99. In 6 cases it varied from 99 to 102.

Two cases suggested meningitis, running unusually acute and rapid courses; except for absence of jaundice and hemorrhage, they might have been diagnosed as "acute yellow atrophy."

In Kelly's cases there was apathy, alternating with restlessness, vomiting occurring without apparent cause, following immediately on taking anything into the stomach, coma and death. The pulse was increased in rapidity, of decreased tension, and in some cases became very weak. Fever was absent except in severe cases, when the temperature would rise to 102 or 103. The face alternately pale or flushed, was at times expressive of great anxiety.

PREDISPOSING CAUSES.

Age, 1 to 10 years, 17 cases; 11 to 20 years, 3 cases; 21 to 30 years, 1 case; 31 to 40 years, 2 cases; 41 to 50 years, 2 cases. Age not mentioned in 5 cases.

Sex: Male, 9 cases; female, 18 case. Sex not mentioned in Bastianelli's three cases.

Possible predisposing or accessory causes are, alcohol, lead, carbolic acid, mercurial and iodoform intoxication. Other causes are homesickness, fright, change of food (Brackett, Stone and Low), intestinal fermentation and putrefaction; extensive fatty changes associated with infantile paralysis; starvation; sepsis. In pregnancy, in the presence of a dead fetus; the existence of a gangrenous mass, diabetes, carcinoma, anemic states from any cause and hemorrhage are also to be considered.

POSTMORTEM FINDINGS.

Liver: Fatty degeneration or infiltration occurred in 16 cases; acute yellow atrophy in 3 cases; icteric nutmeg liver in 1 case; no distinct liver changes mentioned in 4 cases; recoveries in 2 cases; no autopsy in 4 cases; total, 30 cases.

CHANGES IN OTHER ORGANS.

The following changes were noted in other parts of the body: Fatty degeneration of heart; different grades of nephritis; fatty degeneration of muscles of lower limbs; considerable venous congestion of brain; pyelitis; tuberculosis of bronchial lymph nodes and vertebræ.

CONCLUSIONS.

From the analysis of clinical and laboratory reports bearing on this subject, we believe that we are warranted in the following conclusions:

1. Anesthetics, especially chloroform (ether to a very limited degree), can produce a destructive effect on the cells of the liver and kidneys and on the muscle cells of the heart and other muscles, resulting in fatty degeneration and necrosis, very similar to the effects produced in phosphorus poisoning.
2. The constant and most important injury done is that to the liver.
3. This injury to the liver cells is in direct proportion to the amount of the anesthetic employed, and the length of the anesthesia.
4. Certain individuals exhibit an idiosyncrasy or a susceptibility to this form of poisoning which it is difficult to explain.
5. There are certain predisposing causes which favor this destructive effect of chloroform, among which are, (a) age—the younger, the more susceptible; (b) causes which lower the general vitality of the individual and probably the vitality of the liver cells, such as diabetes, previous recent anesthesias, infections from pus germs, diphtheria, intoxications from a dead fetus in the uterus, a gangrenous mass in the abdominal cavity, etc.; (c) exhaustion due to hemorrhage; (d) exhaustion due to starvation; (e) exhaustion due to wasting diseases, such as carcinoma; (f) lesions which have resulted in extensive fatty degenerations, such as occur in the limbs in infantile paralysis; (g) chronic diseases involving both liver and kidney, such as cirrhosis and nephritis.
6. As a result of this fatty degeneration and necrosis of the liver cells, toxins are produced either from the liver cells themselves or as a result of the failure of these cells to eliminate substances which, under normal conditions, they eliminate, but which under these abnormal conditions they fail to do, and these substances, therefore, may accumulate and produce toxic effects.

child vomited dark colored matter. At noon she became unconscious, though still restless and thirsty. At 2 p. m. there was a slight general convulsion. Saline injection was given. Death occurred twenty-eight hours after operation. Pulse was 160, temperature 106 at time of death.

Autopsy.—Liver weighed 13 ounces. Slight increase of fibrous tissue along portal canals. It was preserved in alcohol, preventing good demonstration of fat, but is reported as "undoubtedly fatty in places."

CASE 4.—Girl, aged 3. Dr. Lack opened postpharyngeal abscess from behind sternomastoid. Chloroform was taken well. The operation lasted from ten to fifteen minutes. Twenty-four hours later the child appeared well, but was often nauseated. Temperature was 102 F. At 8 p. m., thirty-three hours after operation, the child had a "cold fit;" there was some shivering and extremities were blue and cold. Temperature rose to 107. Death occurred one-half hour later. Carbolic acid was used at operation, but no carboluria had developed. No autopsy was permitted.

E. G. Brackett,[3] in 1904, J. S. Stone and H. C. Low reported the following:

CASE 1.—M. J. B., girl, aged 8, entered Children's Hospital October 6, 1903. There was extensive infantile paralysis involving most of the muscles of both lower extremities. During preceding year frequent attacks of severe and persistent vomiting, accompanied by marked prostration and rapid pulse, closely resembling condition existing first day of fatal one, may have been predisposing causes.

Operation and Postoperative History.—Oct. 10, 1903: The child was etherized and three tendons were transplanted. She took ether badly, was cyanotic and had rapid pulse. During recovery from ether the child vomited and then seemed comfortable and in good condition for twelve hours. She suddenly began to vomit; the pulse became rapid; rose to 190, and temperature to 106. Vomiting lasted about thirty hours. The child passed from restlessness into a delirious stupor, and died forty-two hours after operation, thirty hours after vomiting began. No test was made for acetone and diacetic acid in this case, but it was later recalled that the breath had a peculiar sweetish odor.

Autopsy.—Liver weighed 510 grams. Surface was smooth and irregularly mottled with yellowish areas from 3 to 5 cm. in diameter, scattered over a reddish-brown surface. Cross-section, yellowish-brown in color. Microscopically, sections of liver, spleen, kidneys and lung were negative.

CASE 2.—Girl, aged 5½ years, entered Children's Hospital, November 16, 1903. Infantile paralysis, four years before, and contracted fasciæ, causing permanent flexion of the thighs. A slight trace of diacetic acid was present in urine.

November 17, 1903: Fasciæ at upper and outer part of each thigh were divided, open method. Operation was short, little ether being used.

Postoperative History.—At 11 p. m., thirteen hours after operation, she vomited a small amount of dark brown thin fluid; during the next ten hours she vomited several times. She slept in all three hours. When awake she was very restless and noisy. Twenty-four hours after operation the condition of patient was very poor. Extremities were cold; pulse weak and rapid; expression anxious; sweet odor of breath noticeable during morning. Twenty-six hours after operation 5 ounces of urine were passed, containing large traces of acetone and diacetic acid. Thirty hours after operation the child became delirious. Pulse was very weak. Thirty-six hours after operation, 12 ounces of 2 per cent. bicarbonate solution were given intravenously; also under each breast. On second morning following operation, child became dull and apathetic; she gradually lost consciousness and coma supervened. Odor of breath became more pronounced. Cyanosis was marked during last few hours. Temperature after operation remained at about 102.

Autopsy.—Liver surface smooth, and pale yellow; in places reddish color. Cut surface, pale yellow; oily and homogeneous. Fresh examination showed marked fatty infiltration. Kidneys, fatty infiltration.

CASE 3.—Girl, aged 4, entered Children's Hospital, February 15, 1904, with double congenital dislocation of both hips. Right hip had been reduced five months previously under ether. Urine was acid, free from sugar and albumin. Three days after entrance to hospital patient was etherized, and in manipulating both femurs were broken.

Postoperative History.—Child was under ether between one-half and three-quarters of an hour. She recovered from the ether as usual. In the evening, pulse was weak and rose to 150. Twenty hours after operation, pulse became suddenly weak and rapid; the color was poor. The child seemed dull; no vomiting. Breath was sweet. Acetone and diacetic acid present in urine. During the day, the child grew rapidly worse and sank into restless coma; lips blue in spite of oxygen; drawn expression of face; eyes became sunken. At 6 p. m. salt solution was injected under both pectorals, followed by marked improvement in pulse and color. Temperature was 104; at 9:30 p. m. the child was able to recognize her mother. At midnight the condition grew rapidly worse. Temperature rose to 106 at 3 a. m. Coma returned. Child died at 5:30 a. m., twenty-three hours after first collapse, forty-three hours after operation.

Autopsy.—Liver large, pale yellow, with a pink color in places. Cut surface pale yellow; lobules indistinctly marked. Knife edge scraped up fatty material. Tissue broke easily on pressure. Kidney, considerable fat in epithelium of convoluted tubules.

Kelly,[22] in 1905, reported the following case:

Patient.—Schoolboy, aged 9. Service of Dr. H. W. Cushing. Operation, May 16, 1904, for appendicitis. Ether anesthesia. The condition of the appendix did not account for the patient's serious condition, so the abdomen was explored and nothing found. A sterile gauze wick was inserted into pelvis and to stump of appendix, and abdominal wound was closed. An area about 1 centimeter in diameter of slight edema and redness was found about 2 cm. from the tip of the appendix. The appendix contained a grape seed. The patient's general condition so grave that 250 c.c. (1-50,000) adrenalin salt solution were given. He was restless after operation. Urine was negative before operation.

Postoperative History.—May 18: Sweetish odor of breath continues. Patient mildly delirious and drowsy. Urine contains acetone and diacetic acid. Vomiting continues.

May 22: General condition markedly improved. Still occasional vomiting. Acetone and diacetic acid present in urine. No delirium, but patient is drowsy and resists daily dressing.

May 26: Occasional vomiting. Expression dull. Patient sleeps most of time; refuses everything by mouth. Acetone and diacetic acid in urine. Patient slowly failed, and in spite of active stimulation died at 11:05 p. m.

No autopsy. Examination of liver during operation was negative.

REVIEW OF SYMPTOMS.

The symptoms appear in from 10 to 150 hours after the anesthesia. The average of Guthrie's first series of ten cases being 37½ hours.

In Brewer's case, a boy of 12, following an operation for appendicitis lasting twenty-five minutes under chloroform, nothing unusual was noted immediately after. The second night following the operation was a comfortable one. He slept six hours; the next day his pulse was 76, and temperature normal. He was cheerful, happy, had no pain, and was hungry.

The following night, he slept quietly until shortly after midnight, when he suddenly awakened and without any apparent cause uttered a piercing shriek, which alarmed his nurse and mother. He continued to scream for several minutes, looked wildly about him, and apparently failed to recognize those around him. A few moments later he fell asleep and rested quietly until morning. The following morning he was distinctly somnolent, when aroused would cry out and appear frightened, but could easily be soothed by his mother.

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[22] Kelly, Jas. A.: "Acid Intoxication: Its Significance in Surgical Conditions," 1905, xli, p. 161.

At 11 in the morning he awoke and again uttered an agonized cry. He continued to scream, so that he could be heard all over the building. Delirium was followed by coma. The face seemed slightly cyanosed; acetone and diacetic acid were found in the urine and blood. Death. No autopsy.

Brewer discusses the case and comes to the conclusion that it was an autointoxication, and considers ptomain poisoning, uremia and acetonemia, and concludes that acetonemia was the cause of death.

Brewer describes the three characteristic symptoms, as sweetish odor of the breath, delirium and rapidly fatal coma. Another symptom is that of air hunger, described by Kussmaul, evidenced by deep breathing and a bright red color of the mucous membranes (this was noted in our case), Cheyne-Stokes respiration and cold extremities.

Brackett, Stone and Low describe the following symptoms: Vomiting associated with collapse; a very weak and rapid pulse; an absence of fever until just before death; cyanosis in the fatal cases, causing extreme dyspnea; apathy and stupor alternating with periods of restlessness, at first, but in the fatal cases gradually deepening into coma and death; and the presence of acetone in the breath and urine.

Stocker describes the symptoms in his case as follows: The morning of the second day after the operation the patient, who had been doing well, became very restless, threw herself about in the bed, but mind was at first clear. The next day coma and death.

Guthrie says of symptoms:

> After recovery from the immediate effects of the chloroform there was usually an interval of a few hours at the end of which the child would begin to utter piercing cries at short intervals, disturbing the whole building by its shrieks, grinding its teeth, tossing, struggling and requiring constant attention lest dressings be torn off or fractured bones displaced. The pupils were often dilated, sometimes unequally, the face being flushed or pale, with a look of wild terror and anxiety. Consciousness was sometimes lost early and never regained; sometimes there were intervals in which the child would be dull and apathetic, but would answer rationally when addressed, and usually deny being in pain. Vomiting was a marked feature in all but one case. It was copious, frequent, persistent and the vomited matter sooner or later almost exactly resembled the dregs of beef tea.

In eight out of ten cases, the symptoms of a marked cerebral type were present, resembling maniacal delirium.

Temperature (10 cases): In 1 case it rose to 103 four hours after operation, and remained there throughout. In 2 cases it rose to 103.2, and 104.6, just before death. In 1 case it remained between 98 and 99. In 6 cases it varied from 99 to 102.

Two cases suggested meningitis, running unusually acute and rapid courses; except for absence of jaundice and hemorrhage, they might have been diagnosed as "acute yellow atrophy."

In Kelly's cases there was apathy, alternating with restlessness, vomiting occurring without apparent cause, following immediately on taking anything into the stomach, coma and death. The pulse was increased in rapidity, of decreased tension, and in some cases became very weak. Fever was absent except in severe cases, when the temperature would rise to 102 or 103. The face alternately pale or flushed, was at times expressive of great anxiety.

PREDISPOSING CAUSES.

Age, 1 to 10 years, 17 cases; 11 to 20 years, 3 cases; 21 to 30 years, 1 case; 31 to 40 years, 2 cases; 41 to 50 years, 2 cases. Age not mentioned in 5 cases.

Sex: Male, 9 cases; female, 18 case. Sex not mentioned in Bastianelli's three cases.

Possible predisposing or accessory causes are, alcohol, lead, carbolic acid, mercurial and iodoform intoxication. Other causes are homesickness, fright, change of food (Brackett, Stone and Low), intestinal fermentation and putrefaction; extensive fatty changes associated with infantile paralysis; starvation; sepsis. In pregnancy, in the presence of a dead fetus; the existence of a gangrenous mass, diabetes, carcinoma, anemic states from any cause and hemorrhage are also to be considered.

POSTMORTEM FINDINGS.

Liver: Fatty degeneration or infiltration occurred in 16 cases; acute yellow atrophy in 3 cases; icteric nutmeg liver in 1 case; no distinct liver changes mentioned in 4 cases; recoveries in 2 cases: no autopsy in 4 cases; total, 30 cases.

CHANGES IN OTHER ORGANS.

The [illegible] ere noted in other parts of the body: [illegible] of heart; different grades of nephritis; fatty degeneration of muscles of lower limbs; considerable venous congestion of brain; pyelitis; tuberculosis of bronchial lymph nodes and vertebræ.

CONCLUSIONS.

From the analysis of clinical and laboratory reports bearing on this subject, we believe that we are warranted in the following conclusions:

1. Anesthetics, especially chloroform (ether to a very limited degree), can produce a destructive effect on the cells of the liver and kidneys and on the muscle cells of the heart and other muscles, resulting in fatty degeneration and necrosis, very similar to the effects produced in phosphorus poisoning.
2. The constant and most important injury done is that to the liver.
3. This injury to the liver cells is in direct proportion to the amount of the anesthetic employed, and the length of the anesthesia.
4. Certain individuals exhibit an idiosyncrasy or a susceptibility to this form of poisoning which it is difficult to explain.
5. There are certain predisposing causes which favor this destructive effect of chloroform, among which are, (a) age—the younger, the more susceptible; (b) causes which lower the general vitality of the individual and probably the vitality of the liver cells, such as diabetes, previous recent anesthesias, infections from pus germs, diphtheria, intoxications from a dead fetus in the uterus, a gangrenous mass in the abdominal cavity, etc.; (c) exhaustion due to hemorrhage; (d) exhaustion due to starvation; (e) exhaustion due to wasting diseases, such as carcinoma; (f) lesions which have resulted in extensive fatty degenerations, such as occur in the limbs in infantile paralysis; (g) chronic diseases involving both liver and kidney, such as cirrhosis and nephritis.
6. As a result of this fatty degeneration and necrosis of the liver cells, toxins are produced either from the liver cells themselves or as a result of the failure of these cells to eliminate substances which, under normal conditions, they eliminate, but which under these abnormal conditions they fail to do, and these substances, therefore, may accumulate and produce toxic effects.

In conclusion, we believe that the dangers of late chloroform poisoning must be more generally recognized and understood; that the lessons from this study are the dangers of long chloroform anesthesias and chloroform anesthesias in patients suffering from the conditions which we cited favored its development; and, we must recognize the susceptibility of children to this form of poisoning. The problem of how to prevent these deaths confronts us unsolved. We have taken the first step in its solution, for we now recognize the cause of these deaths. We must work and find some way to prevent the occurrence of these serious and fatal accidents.

DISCUSSION.

Dr. Herbert C. Moffitt, San Francisco, stated that during the last three years he has seen in consultation six cases similar to the one reported. In each instance there had been some previous affection that might render the liver insufficient. One man had gummata of the liver, with gallstones. A woman had gallstones with frequent attacks of cholecystitis. A child had an attack of catarrhal jaundice some months before an operation under chloroform for mastoid disease. A young woman had had malaria for years, with enlarged liver and spleen, before she was operated on for acute appendicitis. Another young woman had had catarrhal jaundice some weeks before an exploratory laparotomy was done under chloroform. In four of the cases there was the clinical picture described by Dr. Bevan. It has been Dr. Moffit's rule of late, in view of such experience, to forbid the use of chloroform in any condition of suspected hepatic insufficiency.

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Dr. Woods Hutchinson, Portland, Ore., declared that the greater frequency of the occurrence of this condition in children is probably due to the fact that physicians have always thought it perfectly safe to use chloroform in children. It also probably explains the unexpectedly bad results that sometimes follow operations for gallstones, the liver being already disabled and unable to resist the attack of the anesthetic. The liver, Dr. Hutchinson said, is a poison filter and reduces toxins in the blood both from the portal and general systems. These toxins are changed into the harmless excretion, bile. The liver certainly is the organ which first fails in puerperal eclampsia, probably in most cases of Bright's disease, and is beginning to attract suspicion even in acute infections like pneumonia. In chronic poisoning by alcohol, arsenic or phosphorous the liver acts as chief protector of the system and first shows the result of the attack in cloudy swelling and cirrhosis. No matter what the disease, our patients die with one familiar group of symptoms—headache, convulsions, blindness, coma, Cheyne-Stokes respiration, which is called "uremia"—because urea is precisely the one substance which the liver is unable to form and hence is present in the blood in less amounts than usual. Uremia is the syndrome of liver failure. Just as long as the liver can destroy the toxins just so long the system will be able to resist.

Dr. Otto S. Binswanger, Portland, Ore., agreed with Dr. Bevan that death in chloroform poisoning is due to degeneration or death of the liver cells. Dr. Binswanger said that considering the part played in diabetic coma by oxybutyric and diacetic acids, he is inclined to believe that these acids may be responsible to some extent for the fatal results in these cases. In diabetes, he said, these acids cause an acidosis or a reduction in the alkalinity of the blood. They neutralize to some extent the carbonate of potassium or sodium. The carbonates are the chief agents for the removal of carbon dioxid. They are converted into bicarbonates, which in turn are broken up in the lungs into normal carbonates again and carbon dioxid, which latter substance is exhaled. If the quantity of carbonate of potash is reduced by the presence of oxybutyric and diacetic acid, naturally its functions as a carbon dioxid carrier will be reduced. The carbon dioxid will accumulate in the blood and give rise to carbon dioxid poisoning; exactly what happens is diabetic coma.

Dr. D. A. K. Steele, Chicago, reported one additional case of this comparatively rare condition. Two years ago he was called to see a girl aged 12, who was suffering from an acute attack of appendicitis. She had suffered an acident two weeks before by falling down stairs and fracturing both bones of her left forearm. The fracture was reduced under chloroform anesthesia. Dr. Steele had her removed to the Chicago Hospital and operated on her on the third day of her attack of appendicitis, finding an intensely inflamed and adherent appendix buried in a mass of lymph exudate, but not perforated. Chloroform was the anesthetic used during the operation. Everything went along normally for three days, when she began to be restless, delirious, and developed the classical symptoms referred to by Dr. Bevan. At the time of her death Dr. Steele attributed it to actonemia, but now he is convinced that it was a case precisely similar to the one described by Dr. Bevan.

Dr. A. D. Bevan said that Dr. Binswanger is quite correct in attributing certain results to acidosis. The primary cause is the destruction of the liver cells with the liberation in some way of a toxin which produces this symptom complex. Acetone and diacetic acid are to be regarded not as the essential cause, but as by-products in the pathologic process.

THE PRINCIPLE OF LIFE.*

MARSHALL LANGTON PRICE, M.D.

BALTIMORE.

> "The days of our age are three score years and ten; and though men be so strong that they come to four score years, yet is their strength then but labor and sorrow, so soon it passeth away and we are gone."

To many of us who travel along the level, but somewhat narrow pathway of scientific research, there doubtless comes the desire, to leave its beaten surface and to stray in these, border[illegible] where fact and fancy are so [illegible]; where the skies are always blue, the sunshine bright, and the flowers fresh and blooming; where substance appears as shadow and shadow substance and our pet hobbies, viewed with our indulgent paternal eyes, seem beautiful and spirited thoroughbreds. In this land, we can appropriately ask, in the words of the cynical Roman Governor of Judea (freed from the rigid limitations which science imposes), "What is truth?"

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* Read in the Section on Hygiene and Sanitary Science of the American Medical Association, at the Fifty-sixth Annual Session, July, 1905.

7. These toxins produce a definite symptom-complex which makes its appearance from 10 to 150 hours after the anesthesia. This symptom-complex consists of vomiting, restlessness, delirium, convulsions, coma, Cheyne-Stokes respiration, *cyanosis, icterus in varying* degree, and usually terminates in death.

8. It is probable that milder degrees of this poisoning are recovered from, and that the transient icterus noticed after chloroform anesthesia without other evident cause is due to such poisoning, and many cases which exhibit restlessness, fright, mild delirium, drowsiness, etc., after anesthesia may be due to the same cause.

9. This disease is an hepatic toxemia; the toxins producing it hepatic toxins; and possibly the previous condition making its development easily possible should be described as liver insufficiency. Just as we have for a long time recognized a condition, uremia, in which we find arising from a variety of noxious agents, anesthetics, poisons, infections, pregnancy, etc., affecting the secreting cells of the kidney and preventing their normal function, a pathologic condition, accompanied with a certain definite symptom-complex; so we must now, we believe, recognize a condition involving the liver in which we find from a variety of noxious agents (anesthetics, poisons, infections, pregnancy, etc.), affecting the secreting cells of the liver and preventing their normal function, a pathologic condition which we must describe as hepatic toxemia, accompanied with a certain symptom-complex, and showing certain changes postmortem.

We believe that the condition of acute fatty degeneration of the liver with resulting hepatic toxemia is as definite a pathologic entity as is acute pancreatitis with fat necrosis.

10. As by-products in this toxemia, but not as the essential poisons, are found acetone, diacetic acid and betaoxybutyric acid in the blood and urine.

11. Postmortem reveals fatty degeneration of the liver, fatty degeneration and mild degree of inflammation of the kidneys, and, in extreme cases, fatty degeneration of heart and other muscles. The lesion of the liver, we believe, to be the overshadowing and important one, and the one which is responsible for the symptoms and fatal result. The injury to the liver, in some cases, is so great as to result in practically a total destruction of the organ.

12. Somewhat similar hepatic toxemias resulting from fatty degeneration of the liver cells occur in other conditions, and are accompanied with very similar symptoms. In such conditions as phosphorus poisoning, diabetes, puerperal eclampsia, acute yellow atrophy of the liver.

13. This fatty degeneration of the liver with hep
toxemia following anesthesia is almost invariably
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toxemia must be recognized. That chloroform is capable of producing these serious late poisonous effects is a strong argument against its employment, and an argument in favor of the more general use of ether; and yet *we are confronted at times with the Charybdis* of ether pneumonia, on the one hand, and the Scylla of chloroform hepatic toxemia, on the other.

16. The recognition of this danger of hepatic toxemia is a strong argument against the employment of chloroform for long anesthesia, as it can be shown that a two-hour chloroform anesthesia is almost invariably fatal to rabbits and guinea-pigs, from fatty degeneration and necrosis of the liver cells; and a two-hour chloroform anesthesia in man is an exceedingly dangerous thing.

17. These facts in regard to the late poisonous effects of anesthetics and the fact that the dangers increase with the amount of the drug employed, and with the length of the anesthesia form a strong argument in favor of rapid operating and in favor of limiting in every way possible the length of the anesthesia and the dose of the anesthetic. For example, time-consuming preparations of the patient should be made before, not after, anesthesia. In the light of this present knowledge, no surgeon can claim, as some have in the past, that after the patient is once asleep, that it makes no difference whether it requires one hour or two hours for the doing of an operation. In the light of this knowledge, for instance, three-hour breast amputations with the unnecessary ligation of fifty vessels, becomes bad surgery.

18. This problem seems to us a very important one, and worthy of the most careful study and research. At present, we are practically limited to chloroform and ether as general anesthetics. Each has its danger; each has its special field in which one is safer than the other. We have, as a rule, heretofore, employed chloroform in cases in which there was a previous lung or kidney lesion, and in children, with the idea that it was less likely to produce nephritis and pneumonia, and have used ether in the bulk of our work and felt that it was specially to be selected in heart lesions. We must now add new limitations, and
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* Read in the Section on Hygiene and Sanitary Science of the American Medical Association, at the Fifty-sixth Annual Session, July, 1905.

7. These toxins produce a definite symptom-complex which makes its appearance from 10 to 150 hours after the anesthesia. This symptom-complex consists of vomiting, restlessness, delirium, convulsions, coma, Cheyne-Stokes respiration, cyanosis, icterus in varying degree, and usually terminates in death.

8. It is probable that milder degrees of this poisoning are recovered from, and that the transient icterus noticed after chloroform anesthesia without other evident cause is due to such poisoning, and many cases which exhibit restlessness, fright, mild delirium, drowsiness, etc., after anesthesia may be due to the same cause.

9. This disease is an hepatic toxemia; the toxins producing it hepatic toxins; and possibly the previous condition making its development easily possible should be described as liver insufficiency. Just as we have for a long time recognized a condition, uremia, in which we find arising from a variety of noxious agents, anesthetics, poisons, infections, pregnancy, etc., affecting the secreting cells of the kidney and preventing their normal function, a pathologic condition, accompanied with a certain definite symptom-complex; so we must now, we believe, recognize a condition involving the liver in which we find from a variety of noxious agents (anesthetics, poisons, infections, pregnancy, etc.), affecting the secreting cells of the liver and preventing their normal function, a pathologic condition which we must describe as hepatic toxemia, accompanied with a certain symptom-complex, and showing certain changes postmortem.

We believe that the condition of acute fatty degeneration of the liver with resulting hepatic toxemia is as definite a pathologic entity as is acute pancreatitis with fat necrosis.

10. As by-products in this toxemia, but not as the essential poisons, are found acetone, diacetic acid and betaoxybutyric acid in the blood and urine.

11. Postmortem reveals fatty degeneration of the liver, fatty degeneration and mild degree of inflammation of the kidneys, and, in extreme cases, fatty degeneration of heart and other muscles. The lesion of the liver, we believe, to be the overshadowing and important one, and the one which is responsible for the symptoms and fatal result. The injury to the liver, in some cases, is so great as to result in practically a total destruction of the organ.

12. Somewhat similar hepatic toxemias resulting from fatty degeneration of the liver cells occur in other conditions, and are accompanied with very similar symptoms. In such conditions as phosphorus poisoning, diabetes, puerperal eclampsia, acute yellow atrophy of the liver.

13. This fatty degeneration of the liver with hepatic toxemia following anesthesia is almost invariably due to chloroform in the fatal cases. Ether is seldom the cause of a death of this kind.

14. This serious and even fatal late effect of chloroform which has heretofore not been generally recognized must still further limit the use of this powerful and dangerous agent.

15. The possibility of the development of hepatic toxemia makes chloroform distinctly contraindicated in those cases in which there exist the conditions which seem to favor its development, i. e., diabetes, sepsis, starvation, hemorrhage; the presence of intoxication from dead material; the presence of fatty degenerations, as already cited, after infantile paralysis, and lesions of the liver. The susceptibility of children to this hepatic toxemia must be recognized. That chloroform is capable of producing these serious late poisonous effects is a strong argument against its employment, and an argument in favor of the more general use of ether; and yet we are confronted at times with the Charybdis of ether pneumonia, on the one hand, and the Scylla of chloroform hepatic toxemia, on the other.

16. The recognition of this danger of hepatic toxemia is a strong argument against the employment of chloroform for long anesthesia, as it can be shown that a two-hour chloroform anesthesia is almost invariably fatal to rabbits and guinea-pigs, from fatty degeneration and necrosis of the liver cells; and a two-hour chloroform anesthesia in man is an exceedingly dangerous thing.

17. These facts in regard to the late poisonous effects of anesthetics and the fact that the dangers increase with the amount of the drug employed, and with the length of the anesthesia form a strong argument in favor of rapid operating and in favor of limiting in every way possible the length of the anesthesia and the dose of the anesthetic. For example, time-consuming preparations of the patient should be made before, not after, anesthesia. In the light of this present knowledge, no surgeon can claim, as some have in the past, that after the patient is once asleep, that it makes no difference whether it requires one hour or two hours for the doing of an operation. In the light of this knowledge, for instance, three-hour breast amputations with the unnecessary ligation of fifty vessels, becomes bad surgery.

18. This problem seems to us a very important one, and worthy of the most careful study and research. At present, we are practically limited to chloroform and ether as general anesthetics. Each has its danger; each has its special field in which one is safer than the other. We have, as a rule, heretofore, employed chloroform in cases in which there was a previous lung or kidney lesion, and in children, with the idea that it was less likely to produce nephritis and pneumonia, and have used ether in the bulk of our work and felt that it was specially to be selected in heart lesions. We must now add new limitations, and attempt to determine by previous examination whether there is what might be called hepatic insufficiency, the conditions present which favor the development of the late poisonous effect of chloroform on the liver. Another way of solving this problem would be the discovery of new anesthetic agents, which do not carry with them these poisonous effects, or the employment of the present anesthetic in such a way as to avoid these dangers.

For instance, it has been suggested that chloroform and oxygen combined would prevent the poisonous effects of chloroform alone, and there is some evidence to support this view. This should be determined by special research.

Again, nitrous oxid and oxygen combined can be employed for long anesthesias, and experience may show that this mixture may prove to be very much safer than chloroform and ether. Although at present there is not enough evidence on which to base such a claim, in this connection I would cite the fact that the anesthetist in Dr. Bevan's surgical clinic, Dr. F. B. Moorhead, has found that after prolonged anesthesia with gas there is a marked decrease in the amount of hemoglobin, apparently a rather serious destructive effect on the blood, which may limit the use if this mixture.

In conclusion, we believe that the dangers of late chloroform poisoning must be more generally recognized and understood; that the lessons from this study are the dangers of long chloroform anesthesias and chloroform anesthesias in patients suffering from the conditions which we cited favored its development; and, we must recognize the susceptibility of children to this form of poisoning. The problem of how to prevent these deaths confronts us unsolved. We have taken the first step in its solution, for we now recognize the cause of these deaths. We must work and find some way to prevent the occurrence of these serious and fatal accidents.

DISCUSSION.

Dr. Herbert C. Moffitt, San Francisco, stated that during the last three years he has seen in consultation six cases similar to the one reported. In each instance there had been some previous affection that might render the liver insufficient. One man had gummata of the liver, with gallstones. A woman had gallstones with frequent attacks of cholecystitis. A child had an attack of catarrhal jaundice some months before an operation under chloroform for mastoid disease. A young woman had had malaria for years, with enlarged liver and spleen, before she was operated on for acute appendicitis. Another young woman had had catarrhal jaundice some weeks before an exploratory laparotomy was done under chloroform. In four of the cases there was the clinical picture described by Dr. Bevan. It has been Dr. Moffit's rule of late, in view of such experience, to forbid the use of chloroform in any condition of suspected hepatic insufficiency.

Dr. Harry M. Sherman, San Francisco, said that Dr. Bevan has possibly explained something that puzzled him in a patient some time ago. A girl after an operation suffered from persistent vomiting and some jaundice with almost suppression of urine. One day the urine would contain casts with no albumin, and the next day albumin but no casts. Naturally Dr. Sherman thought there was some postoperative nephritis. To stimulate the kidney function he used salt solution under the skin, and the symptoms, including the vomiting, stopped and the patient began to take food, but the urine was not increased in quantity. Evidently it was not a case of nephritis and may not unlikely have been one that would fall into the class described by Dr. Bevan.

Dr. Woods Hutchinson, Portland, Ore., declared that the greater frequency of the occurrence of this condition in children is probably due to the fact that physicians have always thought it perfectly safe to use chloroform in children. It also probably explains the unexpectedly bad results that sometimes follow operations for gallstones, the liver being already disabled and unable to resist the attack of the anesthetic. The liver, Dr. Hutchinson said, is a poison filter and reduces toxins in the blood both from the portal and general systems. These toxins are changed into the harmless excretion, bile. The liver certainly is the organ which first fails in puerperal eclampsia, probably in most cases of Bright's disease, and is beginning to attract suspicion even in acute infections like pneumonia. In chronic poisoning by alcohol, arsenic or phosphorous the liver acts as chief protector of the system and first shows the result of the attack in cloudy swelling and cirrhosis. No matter what the disease, our patients die with one familiar group of symptoms—headache, convulsions, blindness, coma, Cheyne-Stokes respiration, which is called "uremia"—because urea is precisely the one substance which the liver is unable to form and hence is present in the blood in less amounts than usual. Uremia is the syndrome of liver failure. Just as long as the liver can destroy the toxins just so long the system will be able to resist.

Dr. Otto S. Binswanger, Portland, Ore., agreed with Dr. Bevan that death in chloroform poisoning is due to degeneration or death of the liver cells. Dr. Binswanger said that considering the part played in diabetic coma by oxybutyric and diacetic acids, he is inclined to believe that these acids may be responsible to some extent for the fatal results in these cases. In diabetes, he said, these acids cause an acidosis or a reduction in the alkalinity of the blood. They neutralize to some extent the carbonate of potassium or sodium. The carbonates are the chief agents for the removal of carbon dioxid. They are converted into bicarbonates, which in turn are broken up in the lungs into normal carbonates again and carbon dioxid, which latter substance is exhaled. If the quantity of carbonate of potash is reduced by the presence of oxybutyric and diacetic acid, naturally its functions as a carbon dioxid carrier will be reduced. The carbon dioxid will accumulate in the blood and give rise to carbon dioxid poisoning; exactly what happens is diabetic coma.

Dr. D. A. K. Steele, Chicago, reported one additional case of this comparatively rare condition. Two years ago he was called to see a girl aged 12, who was suffering from an acute attack of appendicitis. She had suffered an acident two weeks before by falling down stairs and fracturing both bones of her left forearm. The fracture was reduced under chloroform anesthesia. Dr. Steele had her removed to the Chicago Hospital and operated on her on the third day of her attack of appendicitis, finding an intensely inflamed and adherent appendix buried in a mass of lymph exudate, but not perforated. Chloroform was the anesthetic used during the operation. Everything went along normally for three days, when she began to be restless, delirious, and developed the classical symptoms referred to by Dr. Bevan. At the time of her death Dr. Steele attributed it to actonemia, but now he is convinced that it was a case precisely similar to the one described by Dr. Bevan.

Dr. A. D. Bevan said that Dr. Binswanger is quite correct in attributing certain results to acidosis. The primary cause is the destruction of the liver cells with the liberation in some way of a toxin which produces this symptom complex. Acetone and diacetic acid are to be regarded not as the essential cause, but as by-products in the pathologic process.

THE PRINCIPLE OF LIFE.[*]

MARSHALL LANGTON PRICE, M.D.

BALTIMORE.

> "The days of our age are three score years and ten; and though men be so strong that they come to four score years, yet is their strength then but labor and sorrow, so soon it passeth away and we are gone."

To many of us who travel along the level, but somewhat narrow pathway of scientific research, there doubtless comes the desire, to leave its beaten surface and to stray in those bordering fields where fact and fancy are so delightfully intermingled; where the skies are always blue, the sunshine bright, and the flowers fresh and blooming; where substance appears as shadow and shadow substance and our pet hobbies, viewed with our indulgent paternal eyes, seem beautiful and spirited thoroughbreds. In this land, we can appropriately ask, in the words of the cynical Roman Governor of Judea (freed from the rigid limitations which science imposes), "What is truth?"

An excursion into these fields is not without benefit, even to the hard-headed man of science, and we have a precedent for invading the territory usually considered the exclusive possession of the poet, the artist, and the musician, from the highest possible source. M. Metchnikoff has recently made an excursion into this fascinating country and among the pebbles which he has gathered on its shores are a number of precious stones, which can not fail to add lustre to the crown of a man already a ruler in the field of scientific research.

I have chosen to-day (rather than to attempt the difficult, if not impossible task of adding to this session on water, which has already been so fully and ably discussed) to consider some of those elementary principles affecting human life; always so near to us as hygienists; as a sort of *confession fidei,* if I may be allowed to make such for this congregation.

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[*] Read in the Section on Hygiene and Sanitary Science of the American Medical Association, at the Fifty-sixth Annual Session, July, 1905.

As the faithful in the three Catholic religions never part company without the confession of faith contained in the Nicene or Apostolic creed, so it seems to me proper that we should not separate in our annual meetings without reiterating some of those elementary principles which underlie our endeavors. (A practice which I commend to the consideration of our future officers.)

The primary objects on which our complicated sanitary procedures are built are, after all, the preservation and lengthening of human life; or, the problem of hygiene stated in biologic form, is the preservation, conservation and increase of those metabolic functions of the cell, the resultant of whose sum total we recognize as the phenomenon of life. We can properly leave in other hands the equally important objects of human usefulness and happiness.

I have endeavored to-day to analyze some of these elementary principles connected with a problem, obscure, but of vital interest, and in their consideration to attempt to open a door which has remained closed for over 8,000 years of human history. This problem concerning which are probably the most important and interesting of Metchnikoff's recent investigations, is that of "age," perhaps the most mysterious and insoluble of the problems with which human philosophers have attempted to deal. The question, Why should a man die? is only secondary in importance to the centuries old question of Job, "If a man die shall he live again?"

M. Metchnikoff may be credited with being the first scientist who has directly investigated this problem and who has given us anything bearing on its causation. The discordance of even the tentative theory which he pronounces will appear in the further analysis of the biologic principles connected with senility.

In the investigation of this problem, Metschnikoff has made examination of the tissues and cells of numerous men and animals who have died at advanced years. He ascribes the failure of function which we recognize as age to the inability of the highly differentiated cells to resist the action of the phagocytes which he has found, particularly in the nervous tissues, to attack the former and to destroy them by the usual digestive activities. It will be noted that this deficiency of the aged cell which M. Metschnikoff has observed—though of the utmost importance in the fate of the organism—is merely one of the defects, of which there are probably many, inherent in the senile cell, and its presence there does not explain the important problem of why the aged cell should be deficient at all; and it is difficult, indeed, to conceive, why the one-thousandth or ten-thousandth descendant of a cell should be less able properly to perform its function than the one-hundredth or five-hundredth descendant.

From our present knowledge, we can only advance three theories that would properly account for the condition known as senility in an animal organism:

First, that the failure of the cells is due to successive and repeated inflammations, and that as a result of this action of pathogenic organisms and toxins the specific cells are destroyed and are replaced by connective tissue cells, with the formation of fibrous or scar tissue, which, of course, is unable to perform the functions of the cells which it replaces.

Second, that the failure of the cell is a nutritive one, the cell becoming unable with the advance of time, to maintain and to continue those metabolic processes which are required of it in the performance of its special functions.

Third, that the failure of the cell is due to the loss of the properties which enable it to resist and to overcome the constant activities of pathogenic organisms and toxins.

If we accept the first hypothesis we must believe, other things being equal, that the functioning power of the organism is to be measured wholly by the number of cells which it contains capable of performing their specific metabolic functions, that the physiologic age of the organism will depend in turn on the number and extent of the inflammatory and toxic processes to which it has been subjected. That this substitution of functionating cells by connective tissue cells in the form of a fibrous reticulum or scar is a decided factor in the "age" of the organism there can be no doubt, but the hypothesis that it is the only condition connected with what we know as old age, is open to numerous objections.

In the first place, we would expect to find those organisms which had undergone repeated general inflammations always more advanced in the period of physiologic age than other organisms of the same years, not subjected to the results of inflammations or toxemias—a supposition not in accord with the general clinical experience of the present generation.

Second, we find the changes incident to age in certain organs and tissues which, so far as we can ascertain, have undergone neither inflammations nor toxemias. For example, in the skin of the old man we find an atrophy, a loss of elasticity, and a tendency to malignant and other morbid proliferations which are evidently independent of inflammatory or toxic influences; nor do the commonly recognized inflammations of the skin seem to have any influence in producing these degenerative changes.

The third and most forcible objection to accepting this hypothesis (and probably the most characteristic deficiency of the senile cells) is the loss of the power of reproduction and regeneration. This regenerative deficiency can not have any relation to local or general inflammation, and the general rule seems definite for all organisms of the same species: *The regenerative power of the cells composing an organism are inversely proportional to the age of the organism.* Aside from this most striking deficiency in function, we might ascribe many of the tissue degenerations to another condition practically always associated with age, viz., to a diminished blood supply dependent on arteriosclerosis. We see these degenerations frequently, however, in tissues possesed of an abundant blood supply, and in which arteriosclerosis is absent. On the other hand, involution degenerations do not occur in the tissues of the young, even when a local arteriosclerosis is present or when the vascularity of the part is diminished by reason of other conditions.

Arteriosclerosis does not in itself constitute age, although it is probably the best measure which we possess of senility in the general cellular system. We probably have in the vessels, preceding and causing their eventual sclerosis, both diminished resistance to bacteria and toxins and loss of regenerative powers of the endothelium, all acting to produce the substitution of the endothelial cells by fibrous tissue. The production of fibrous tissue is itself, no doubt, directly associated with the loss of the power of regeneration on the part of the ectodermic or endodermic cells which it usually replaces.

We are then compelled to fall back on one of the two remaining hypotheses—either the senile condition of the cell (of which loss of the regenerative function is the prominent sign) is due to failure of the metabolic activities connected with nutrition, or it is due to lack of power to neutralize and to oppose the action of pathogenic organisms, or of toxic substances.

On closer analysis, we perceive both these former deficiencies to be present and inherent in the senile cell, in common with the loss in the power of regeneration, though the latter deficiency is most evident.

Whether we regard the depreciation of the cell as metabolic or bacteriolytic the failure must be primarily nutritive, as Metchnikoff has clearly shown that the antitoxic properties of a cell are closely connected with its nutrition and growth and are probably only specific modifications of the function of nutrition to adapt the cell to the special necessities of the organism. There must be some common source from which the cell derives its metabolic, bacteriolytic and antitoxic functions. As these functions diminish with advancing years, it is natural to suppose that the source from which they are derived diminishes in like manner; our first step in the investigation of this source, therefore, would be the comparative investigation of the senile and juvenile cells. The comparative analysis of the young and old cell does not as yet show any perceptible difference in their chemical composition, nor can we detect with the microscope any structural divergence; it is in their biologic functions and properties alone that we detect their dissimilarity. That the deficiency of the senile cell is a chemical one we have reason to believe by analogy with other functionating cells. When we speak of a cell being worn out or exhausted we infer that some substance which the cell previously contained has become deficient during the performance of its functions.

We judge from the constant chemical composition of specific cells of all ages that such substance, if existant, must be present in minute quantity.

It is on the theory of the existence of this substance that I have formulated my hypothesis:

1. *That every living cell, human or animal, contains a specific substance necessary to its functions.*

2. *That this substance becomes progressively exhausted during the life of the organism, to a certain stage, beyond which the metabolic activities of the cell are brought to a close.*

3. *That this substance alone, of all the materials entering into the composition of the cell, is not renewed after a certain early stage of the life of the organism.*

4. *That the age and duration of the activities of the cell are dependent on the amount of this substance with which it is primarily endowed.*

5. *That the primary endowment of the cell occurs at a very early period of its growth.*

This substance I have called bioplasmine.

We may illustrate the relation of a bioplasmine to the organism as follows: The individual may be compared to a lifeboat cast adrift from a sinking ocean liner (the parent organism), the members of the crew representing the individual cells, and a cask of water the supply of bioplasmine from the ship's stores. This supply may be exhausted quickly or slowly, according to the demands made on it, but it will never be renewed. The water, it will be further noted, is not equally apportioned among the members of the crew.

As all the materials of the cell, except this specific cell substance, are constantly renewed, the bioplasmine molecule occupies a place apart in the cell substance.

That this molecule is independent of the composition and activities of the cell substance proper we can infer from the apparently identical composition of the juvenile and senile cells. The specific chemical composition of the cell remains the same, according to our present means of chemical analysis, whatever its age, and it is mainly by the loss of power of reproduction and regeneration and the bacteriolytic functions that we can perceive its gradual decline and final dissolution.

As regards the nature of bioplasmine, it can only be said that it remains very much the same substance during life, except that its activities become progressively lessened. This would lead us to believe that we have to deal with a comparatively large proteid molecule which has the power of splitting off some body essential for the metabolic changes concerned with nutrition. This substance may be called metaboline or nutrescine. The bioplasmine molecule may be represented by the following graphic formula (Fig. 1):[*]

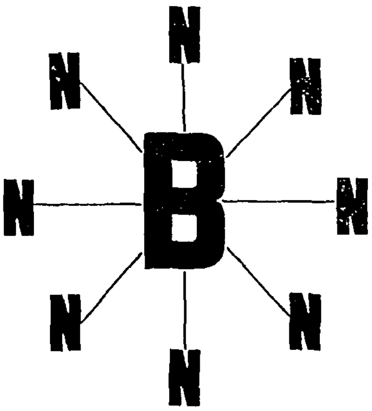

Fig. 1.—Bioplasmine.

It is not likely that this substance is formed by a single process of combination, but rather that it is the result of a series of anabolic changes.

For its origin I believe that we must look to the very earliest of the processes leading to the formation of the embryo, preceding the time when the activities of formation and growth become macroscopically manifest.

Judging by analogy, we would suppose that the substance called bioplasmine, like other substances concerned with metabolism (such as the enzymes), had a preliminary body or zymogen from which it is generated. This substance may be called *bioplasminogen*. The transformation of bioplasminogen into bioplasmine taking place in the cells during the act of absorption. We have first to consider, then, the formation of bioplasminogen.

Some of the reasons have already been briefly mentioned for placing the time of the formation of bioplasminogen in the early history of the embryo, and there are further reasons for supposing that this formation takes place at the beginning of the life of the organism as a separate entity, viz., during the act of conception. The strong physical attraction between the male and female sexual elements would indicate a basis in a strong chemical affinity, and it is during this act that a substance enters the composition of the cell that can not be renewed during its later life.

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[*] In all the figures B represents the central radicle proteid or binding group; and N the "side-chain" group spoken of as metaboline or putrescine.

The action of the male on the female cell would appear primarily to be one of ionization, and it is possible that we may find in the nutrescine molecule a substance peculiarly capable of ionic dissociation. The nutrescine molecule need not necessarily be of proteid composition, but may consist of various mineral elements or salts combined in such a manner as to produce the degree of ionization necessary in proteid anabolism.

Loeb believes that the primary action of the male on the female cell, leading to the formation of the morula mass, to be one of ionization. As is well known, he has been able to produce the early stages of the processes following impregnation, leading even as far as the formation of imperfect embryos, by the action of dilute solutions of various salts, particularly potassium cyanid, on the unimpregnated ovum. It is interesting to note that by the action of this salt an extreme prolongation of life in certain low animal forms has been possible. It is possible that cyanogen or a similar radicle may enter into the composition of the nutrescine molecule of the bioplasmine body.

We may conceive of three, out of many intermediary stages, in the formation of bioplasmine. The specific elements leading to its production are doubtless to be found in the elementary male and female cells. These cells we may consider to contain substances possessed of strong mutual affinities which may be named spermatoplasmon and ovoplasmon, respectively (Fig. 2). By their interaction, ovoplasmon and spermatoplasmon give rise to bioplasminogen; this body is then taken up by the cells, probably during their active segmentation, and by them further transformed during absorption into bioplasmine. There would be no reason to suppose that the cells retain this power of transforming the bioplasminogen molecule and of absorbing it indefinitely, and it is probable that this function is at an end after the embryonic cells have ceased their active segmentation, i. e., after the formation of the morula mass.

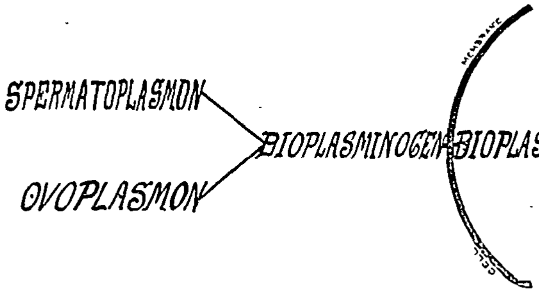
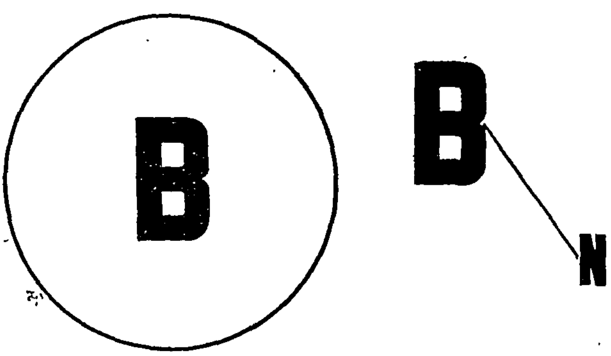


Fig. 2.—Formation of Bioplasmine.

The bioplasmine molecule is apparently quite stable, though it is capable of disassociation with great readiness under the proper stimulus.

Starting with the graphic formula (Fig. 1), bioplasmine undergoes progressive decomposition by the loss of successive nutrescine molecules, the completed reduction only occurring theoretically with the loss of all the N/ molecules (Fig. 3). More probably, however, a complete reduction would not be possible through the forces of vital chemistry; the end-product would be better represented theoretically by the graphic formula in Fig. 4. The power of parting with the N/ molecule which the bioplasmine body possesses when subjected to the action of certain stimuli depends on a sort of instability which makes it readily capable of decomposition under physiological influences. It becomes progressively more stable as the number of N/ molecules diminish until it reaches a stage where the physiologic stimuli are no longer capable of causing dissociation, so that practically the metabolic activities of a cell never survive to a stage where the whole molecule would correspond to the graphic formula shown in Fig. 3 or 4, but would cease when the number of N molecules was still relatively large.



Figs. 3 and 4.—Reduction of Bioplasmine.

We may use these formulæ as a graphic means of representing the physiologic age of the cell according to the state of the bioplasmine molecule which it contains. Dividing the age of the cell into three periods, we can represent the youthful, middle-aged, and senile cells as is shown in Fig. 5.

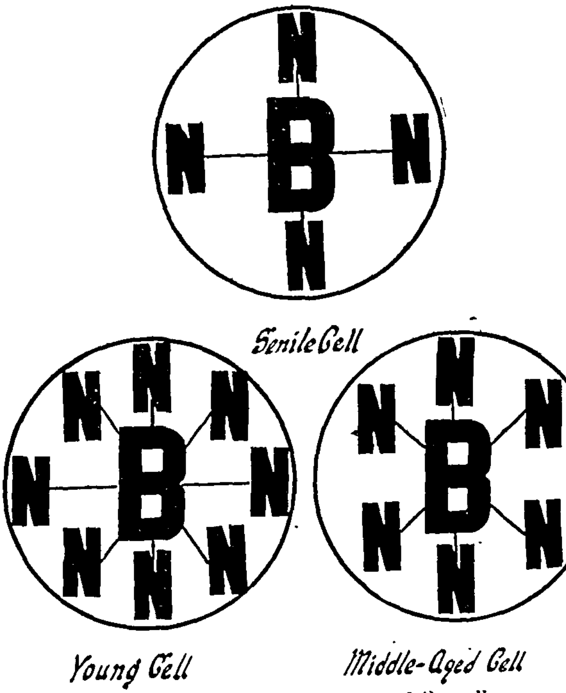


Fig. 5.—Three periods in age of the cell.

The molecule N probably represents the essential body both in metabolic processes and in the formation of antitoxins and bacteriolysins, so as the cell becomes older not only do its metabolic functions become diminished, but it is increasingly less able to cope with pathogenic organisms and toxins.

When the bioplasmine molecule reaches a certain degree of stability, the cell becomes eliminated either by the action of parasites or by the substitution of cells endowed more liberally with the essential metabolic molecule.

The supply of bioplasmine does not seem to be equally distributed among the various cells, the connective tissue cells seem to be most liberally endowed and the more highly differentiated cells appear to become deficient long before there is any marked diminution in the capabilities of the cells of the mesoderm. If we take the regenerative powers of the cell as a measure of the amount of bioplasmine with which it was originally endowed, we find a marked difference in the stage at which senility becomes evident in cells possessed of different functions. The nerve cells have been considered to have no power of reproduction after the time when they have taken on their special function, but it has recently been shown that even nervous cells have a power of regeneration during the earlier periods of the life of the animal.

The chemical properties of bioplasmine must be considered more or less unique. It seems under ordinary conditions to possess a certain stability, yet when the proper stimulus is applied it appears to part with one or more of its nutrescine molecules with great facility. Its action is different from most of those substances which cause chemical or physiologic combination by their presence in minute quantity, inasmuch as the N/ molecules do not undergo decomposition and recomposition as do bodies having the so-called catalytic action (such as the ferments), but they enter into direct combination with the nutritive bodies formed and are thus permanently lost with the cellular katabolisis. Bioplasmine is the one substance of the materials composing the cell which is not renewed during nutritive processes. It thus has a place apart from the cellular chemical changes which it influences indirectly by parting with its nutrescine molecules.

In order to arrive at some suggestive conclusion as to the nature and mode of action of this body whose existence I have assumed, I have further taken up the study of regeneration and reproduction on the basis of this theory, as these functions best mark, as already stated, the difference between the young and old cell. From this theory I have endeavored to formulate rules under which reproduction not only may occur, but to determine the conditions under which it necessarily must occur if these conditions are present in the cell and its surrounding medium. These rules may be presented in the following form:

In the young cell a certain stimulus arises from the surrounding medium for the production of N bodies, which production occurs in excess, a certain number combining to form preliminary substances which are to undergo further anabolic changes, finally to convert them into the proximate principles of the cell, the remainder being left free and uncombined within the cell. As the stimulus arises from the surrounding medium, the production of N/ bodies is most marked at the poles of the cell (which are most exposed to the medium). This overproduction soon reaches such a stage that the plasma elements can not enter the cell in sufficient amount to combine with the N bodies without an increase in the area presented by the cell to the surrounding medium. This increase is then accomplished by division of the cell, which is a necessity in order to adapt it to the changed conditions. Mitosis is favored by molecular tension resulting from the accumulation of N bodies at the poles of the cell, where the influence of the surrounding medium is most marked. This process is the basis of the chemical and vital forces of mitosis, with the physical evidences of which we already are familiar. The basis of mitosis thus is purely chemical and is determined by a stimulus derived from the plasma.

The action may not be wholly one of principles in solution in the plasma; certain cells, particularly the leucocytes, seem to have the power of exciting cell proliferation. The chemical basis of mitosis is represented graphically in Fig. 6.

The influences leading to cell regeneration are not wholly to be found in the plasma, but also depend on the number of cells among which the stimulus must be divided. The cell deficiency which occurs from traumatism is no doubt a potent influence in determining regeneration, but equal importance is to be ascribed to the effusion of lymph and to the presence of leucocytes which always collect in numbers where there is any considerable destruction of fixed cells.

It is possible that different chemical compounds act as stimuli in reproduction, on the one hand, and in regeneration, on the other. We can not consider, for example, the formation of scar tissue as the result simply of reproduction of the connective tissue cells; a special stimulus seems to be necessary to cause the connective tissue cells to form a scar. This stimulus may be derived from the mononuclear leucocytes also, as scar tissue forms in the infectious granulomata, in which the polymorphonuclear leucocytes are largely absent. There are doubtless many intermediary bodies capable of combining with the bioplasmine radicle, of which the leucocytic stimulant may be one.

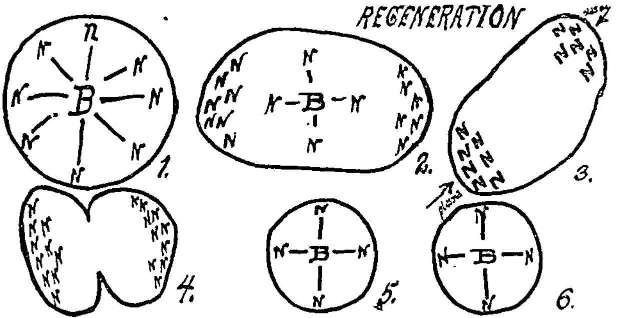


Fig. 6.—Regeneration.

The question of abnormal regeneration may be briefly touched on. Morbid proliferations play an important, if not essential, part in benign and malignant neoplasms. The bioplasmine molecule must be concerned in these processes, though not necessarily directly. The influence of the bioplasmine molecule may occur in one of two ways—either the bioplasmine molecule becomes disorganized and parts with a number of nutrescine molecules far in excess of the physiologic needs of the organism, or the same result is produced under the action of a pathologic stimulus derived from the plasma. In producing the fatal result we have both the directly injurious action of the morbid growth or growths and the exhaustion of the essential nutritive principle. It is the latter factor which is most active in producing the general organic nutritive deficiency spoken of as cachexia.

Regeneration and growth, both normal and pathologic, take their character from heredity, using the term in its largest significance, and the subject of heredity is itself capable of further analysis along these lines. The principle on which heredity depends can not be limited to the individual, family or race, but must be extended to species as well. That the properties of a cell should persist through several generations points to the conclusion that the persistence depends on persistent chemical and physical composition of the cell. Or using the term in the sense of qualities persisting in the descendant cells, heredity may be defined as the persistence of the chemical composition of a cell through several generations of descendants.

The problem becomes more complex when we deal with the higher organisms, because among these are specifically differentiated cells, possessed of varying properties and capabilities. While these properties and capabilities are derived from the ancestor, the problem is much complicated by the necessary inter-relations of the component cells forming the organism. Further, the individual functions and capabilities of the cell are more numerous. The character of the individual depends on his nutrition, the term nutrition signifying in general the chemical and physical composition of the cell in relation to its medium. In the persistence of the chemical cellular endowment in the ancestors we have the cause of the similarity of individuals forming the family, race or species.

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As regards the individual cells: 1. The amount of bioplasmine with which the original cells are endowed. 2. The character of the bioplasmine molecule, particularly its facility of dissociation under appropriate stimuli; as regards the organism as a whole, the harmony or lack of harmony of nutritive energy between the variously differentiated cells.

The latter factor determines whether the resultant will be large or small.

Generally, we will look for a maximum resultant in certain functions and a minimum in others. We look for a certain similarity in the successive similar functions in the individual, and these similarities we can group under the head of characteristics.

It may be permissible to speculate on the practical results that might accrue from the isolation of a specific metabolic body from the cell. If, for instance, we could isolate and determine the properties of bioplasmine, we might consider that we had made a step toward the almost indefinite prolongation of life. The problem which would present itself would be the renewal of the tissue supply of bioplasmine whenever the original supply gave evidences of becoming exhausted. There are many difficulties in the way of renewing this material in the body, even if we had successfully isolated and manufactured it. It is probable that bioplasmine, as such, is not absorbed by the proliferating cell, but must be absorbed as the preliminary body which has been spoken of as bioplasminogen; moreover, it would not be reasonable to expect a matured cell to take up bioplasminogen if it could be injected into the blood of the organism, as it is probable, as already suggested, that the cell only possesses the function of absorbing bioplasminogen during a very early period of its embryonic life. The function may cease as early as the formation of the morula mass. It may be possible that we could extract from the embryonic cell some substance that would enable the matured cell to absorb bioplasminogen and to convert it to its uses.

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Among other tests I always examine the field of rotation of each eye by Stevens' tropometer in order to determine the relative strength of the muscles. I sometimes find that the total or chief weakness in the muscles of the fixing eye, and if, in such cases, the vision of the squinting eye is good and especially if there is hope of binocular vision, I operate on the muscles of the fixing eye.

The suture material should be black braided silk, about No. 8 in size, which has been boiled, dried and then soaked in a warm sterile ointment composed of equal parts of white vaselin and white wax and 0.25 per cent. carbolic acid. After removal from this ointment the suture is stiff and slips readily. The needles should be sharpened and examined with the same care as cataract knives and always kept in a dry place. Except when in use they should be handled only by forceps, never with the fingers, which might cause them to corrode. It is well before the operation to examine the needles under a strong magnifying lens such as a powerful loupe or a +20 D.S. lens, for often the ends will be found bent or forked, which would prevent the needle from passing readily.

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By this suture, the upper and lower portions of the tendon or muscle are securely held in separate loops, but not strangled, while the circulation in the middle portion is not interrupted although it is also supported by the cross piece of the suture. The more tension put on this suture, the more securely it will grasp the tendon or muscle. Only one knot is necessary, whereas four are required in Worth's operation. Furthermore, the suture can adjust itself as in the pulley operation and cartwheel motion can be influenced by the location of the anchorage into the sclera. It is simple, easier and takes less time to make than most other sutures, and it holds.

I believe that it will hold, not only in the tendon but also in the muscular tissue, especially when fortified by passing it through the conjunctiva and capsule as described. Different authorities estimate the tendon of the external rectus to be about 3.7 mm. long. I have repeatedly placed the suture farther from the insertion of the tendon than its estimated length, hence in the muscular tissue, with perfect results. If Tenon's capsule is pushed well back on the muscle or tendon, it can afford considerable support to the suture and, because of its great elasticity, it will not limit, ultimately, the rotation of the eye to the opposite side. Furthermore, a careful study of the Y shape of the muscle, tendon and check ligament will make clear why an advancement will increase rotation, and not diminish it as a tenotomy does, and also why advancement of capsule forward will not tend to limit the rotation of the eye to the opposite side. I have frequently tested the field of rotation in eyes thus operated on and found it to be as large or even larger than before the operation was performed. The only possible objection to this suture that I can think of, is that in case any portion of its mooring should slip, it would affect the whole suture. However, this accident has never occurred in my practice.

I soon learned that the greater part of the pain in an advancement is caused by the manipulation of the forceps during the insertion of the sutures. Advancement forceps have usually had their blades at an obtuse angle to the handle and this makes it difficult for the operator to tell how the end of the instrument is placed. He is inclined to move the handle in the middle line, thus strongly pulling one side of the muscle or tendon. The long heavy handle on most forceps, when not supported, also acts as a lever, the eyeball or lids serving as a fulcrum, and pulls themuscle, causing pain. My forceps are curved on the flat so that the end of the handle is always supported by the nose or temple, while the middle portion does not rest on the eyeball or lids. The blades are at right angles to the handle, therefore the forceps are easy to manipulate, causing much less pain than the others with which I am familiar.

Cold applications should be made at regular intervals the first day. A monocular bandage with gauze pad is required for about seven days, the eye being irrigated with some mild antiseptic and dressed each day. In the eye not operated on a drop of 1 per cent. atropin sulphate solution should be instilled and it should be covered with a shade for 24 or 48 hours which may be raised when necessary. The sutures are removed at the end of one week. The patient should be cautioned to look straight forward, turning the body and head instead of the eyes for the first few days. If lenses are to be worn, pieces of adhesive plaster may be placed on them so that a narrow vertical clear space may be left through which the patient can see except when the eyes move laterally. He had best remain in a semi-dark room for the first two days and not use the eyes for at least one week.

After the above consideration of this important subject, I decided to address a circular letter to ophthalmic surgeons throughout the United States in order to have their views regarding some of the difficult questions in ocular muscle operations. I wished to learn regarding only those cases where non-operative treatment had failed or was impracticable, fully realizing its importance in the majority of cases.

That this branch of ophthalmic science is not thoroughly understood is clearly demonstrated by the wide diversity of opinions among leading ophthalmologists, and while in some phases of this interesting subject no uniformity of opinions can be found, yet regarding others, it is possible to arrive at certain deductions. Unfortunately I neglected to place the name of the opthalmologists addressed on the question sheet, therefore I am unable to state the authority for many excellent answers, owing to the failure of the writers to sign their answers.

In what percentage of your ocular muscle operations do you prefer an advancement alone and in which cases?

In over eighty replies to this question but twenty seven stated percentages, the average of which was about 15 per cent. As to the cases in which advancement alone is preferred, many replies were received. Several excellent observers advocate its use in low degrees of exotropia and in exophoric cases, the general censensus of opinion being that it is of the greatest benefit in only a low degree of squint or in a tendency to the same. Some state that it is efficient when a simple tenotomy will not correct or has failed to do so or in case of previous overcorrection. Gifford of Omaha states that it should be used in divergent squint where binocular vision may be expected. Todd of Minneapolis advises its use in a large percentage of phorias and in some alternating tropias. Savage says he uses it only rarely and in cases where the stronger muscle is not intrinsically too strong. Among those who seldom, or never do an advancement alone, are Knapp, Thorington, Hubbell, Ellet, Bradfield, Lapsley, King, Roy, Melville Black, Lukens, Minor, Theobald, Snyder, Foster and Woods.

Do you think that a suture will hold in the muscular tissue or only when placed in, through, or against the tendon?

Reber, Posey, Ziegler, Greenwood, Melville Black, Carrow, Hills, and a few others state that a well placed suture should hold in the muscular tissue. Other observers think that it would conditionally. Among those who have the opinion that the suture would not hold in the muscular tissue, but only in the tendon, are Woods, Weeks, Rogers, Veasey, Wescott, Thorington, King, Vail and Holt. Many include either the capsule or conjunctiva or both, as Holmes, Risley, Knapp, Savage, Würdemann, Dodd and Gifford. Culver and Eaton believe it is best against the tendon. Todd and Howe state that there must be a loop, knot or ligation of the muscle or tendon in order that a suture may hold. I think there may be some slipping of the sutures where the capsule and conjunctiva are not included. It is well to remember that the tendon of the external rectus e. g. is but 3.7 mm. long, and since the sutures are often placed farther from the insertion of the tendon than its whole length, they must be in the muscular tissue.

Do you pass your suture through Tenon's capsule to get additional hold and, if the capsule has first been well pushed back on the tendon, do you think it subsequently affects the rotation of the eye to the opposite side?

Eighty-five per cent. of the replies state that the capsule of Tenon and conjunctiva are included with the muscle or tendon in the suture. Tenon's capsule and the conjunctiva are not included in the suture by 6 per cent. of those who answered. Eighty per cent. of these replies indicate that if the capsule is pushed well back on the tendon before introducing the suture, the rotation in the opposite direction will not be affected. Fifteen per cent. express a belief that the rotation will be affected. About 10 per cent. of the observers seem to think that the capsule should not be pushed back on the tendon.

Do you anchor the suture deeply in the sclera? Have any serious complications been caused by so doing? To what do you attribute it if the suture in the sclera gives way?

Sixty per cent. of the ophthalmic surgeons who replied pass the suture deeply in the sclera. About 15 per cent. pass the suture only superficially through the sclera, or even in only the episcleral tissue. Among the former are Reber, Nance, Connor, Culver, Savage, Holmes, Knapp, Greenwood, Donovan, Weeks, Melville Black, Stricker, Ellet, Gifford, Wescott, Vail, Dean and Würdemann. For every man who believes that deep sutures in the sclera cause serious complications, fifteen think they do not. Several did not answer this part of the question. The great majority of observers think that if the suture in the sclera gives way it is because of its not being placed deeply enough in the sclera or in not including enough of it. Suppuration, too small or too large a thread or needle, too much cutting by the needle, careless tying of the suture, too high tension and insufficient strength of the tissues are also mentioned as explanations.

In advancement do you believe in overcorrecting at the time of the operation? a. If a tenotomy has been performed on the opposing muscle of the same eye? b. If such tenotomy has not been performed? What tests, if any, do you make at the time of the operation to learn when the desired amount of effect is obtained?

About 50 per cent. of the observers believe in overcorrecting at the time of the operation; about 30 per cent. do not; the remaining 20 per cent. are conditional. Some would overcorrect in divergence, but not in convergence, particularly if the convergence be in children. About 60 per cent. consider overcorrecting unnecessary if a tenontomy of the opposing muscle has been performed; about 20 per cent. believe in overcorrection in case the opposing muscle has been tenotomized. Among those who believe that overcorrection is necessary if tenotomy has not been performed, and who usually think it is unnecessary to overcorrect if tenotomy has been performed, are Würdemann, Greenwood, Donovan, Weeks, Eaton, Callan, Griffin, Seabrook, Roy and Ayres.

In approximately what percentage of cases of advancement do you tenotomize the opposing muscle of the same eye, making a combined operation? Name your chief reasons for so doing.

Although some strongly advise against tenotomizing the opposing muscle of the same eye together with advancement, a much larger proportion prefer the combined operation, the average percentage being about 76. It is especially advised in cases where the eye is amblyopic and where there is squint of 15 degrees or more. It is said to increase the effect and to relieve the tension on the suture, so that it will not cut through so readily, and the final result will be more nearly like that at the time of the operation. Savage says the stronger muscle needs weakening and the weaker needs strengthening, especially in internal and external squint, and that he never cuts a tendon entirely across. Some of those who advise the combined operations under different conditions are Risley, Connor, Posey, Savage, Baker of Cleveland, Culver, Todd, Ziegler, Würdemann, Woods, Greenwood, Holmes, Weeks, Theobald, Eaton, Melville Black, Stuever, Veasey, Callan, Bradfield, Griffin, Seabrook, Hulen, White, Ellet, Wescott, Crane, Martin, Hubbell, Holt, King, Roy, Lukens, Hale, Starkey and Thorington.

In what percentage do you perform tenotomy alone and in which cases?

The average of the answers gives approximately 38 per cent. A very large number advise tenotomy in cases of heterophória, especially hyperphoria and esophoria, and in low degrees of heterotropia. Some never perform tenotomy, others do it in all cases. Several stated that if the deviation does not exceed 15 degrees, they do tenotomy alone. Several limit it to the above-mentioned cases, where the vision is good with the two eyes; some to cases where there is no hope of binocular vision, and a few where the squinting eye is amblyopic. Weeks prefers tenotomy in squint of low degree where the opposing muscle is of normal power. Ellet uses it in some cases in children where it seems nature, if helped, will cure. Savage recommends it in a very large percentage of heterophorias. De Schweinitz writes that he is more and more convinced that tenotomies are likely to be followed by excessive effects in after years, and that he inclines more to advancements in the place of tenotomies. Stevens and Risley call attention to the fact that the vertically acting muscles are sometimes at fault, when the defect is apparently in the lateral muscles.

What means, if any, do you employ to prevent sinking of the caruncle?

A majority of the answers showed that nothing was done to prevent sinking of the caruncle; several advise free dissection of the conjunctiva from the underlying tissues out under the caruncle and particularly recommend the avoidance of too free incision of the capsule, and also warn against any or too much interference with the check ligaments. Some recommend that the opening in Tenon's capsule and the conjunctiva be very small; others that the opening in the conjunctiva be large, but that it is subsequently sutured. Holt considers it important that the dissection be carried up under the caruncle in order to cut any fibers of muscle going to it.

Do you think a partial tenotomy has any appreciable permanent effect?

Seventy-five per cent. of the answers to this question are negative. Some have not tried the operation, many others believe the effect is but slight. Among those who answer in the affirmative are Savage, Connor, Ziegler, Weeks, Howe, Griffin, Minor, White and Holt. Several, especially Würdemann, Holmes, Risley, Baker of Michigan, Bradfield, Foster, Eaton, Martin, Porter of Chicago, Carrow, Crane and Grove are very emphatic in opposing it, particuarly in so-called true graduated tenotomy.

If any effect is obtained by a partial tenotomy, is it to be ascribed to interference with the check ligaments, stretching or to what?

Connor and Weeks attribute it to weakening of the muscle, Greenwood to a lessened action of the muscle fibers that have been cut, Ziegler to the elongation of the tendinous attachment, Holt to the setting back of the central fibers of the tendon, Ayres to stretching. With a very little experience, I do not believe that a slight graduated tenotomy, where only the central portion of the tendon is cut, has any permanent effect, as I have repeatedly found that even the slightest strands in the peripheral portion of the tendon, or even posterior to the insertion of the tendon, often prevent the eyeball from changing its position in regard to the muscle, before the reattachment of the tendon. Cicatrization plays an important part in the final effect, no doubt making the condition worse, although at first it may have been better. I think that if an effect is obtained it is probably due to stretching of the muscle or tendon, as may be done by a strabismus *hook, the complete severance* of the tendon, or interference with the check ligaments. Of course, the latter two should not be described as a partial tenotomy.

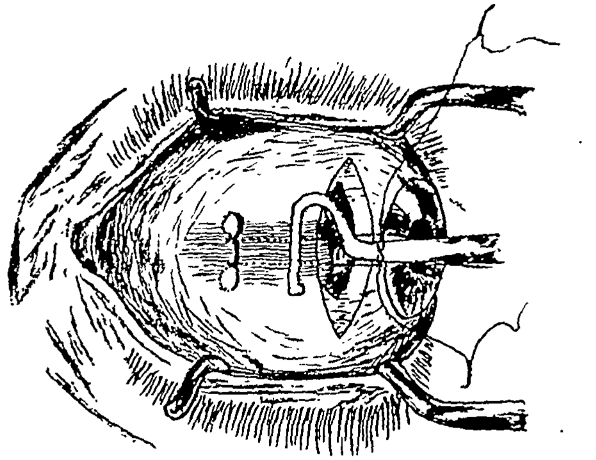

Fig. 1.—Opening in conjunctiva and capsule and position of advancement forceps, suture and knot.

Do you always operate on the squinting eye or are you guided by the degree of rotation of each eye, e. g., as measured by Stevens' tropometer?

A large majority operate only on the squinting eye. Todd, Ziegler, Weeks, Eaton and Hills depend largely on the degree of rotation of each eye. Several always operate on the squinting eye first, especially if it is amblyopic, and later on the other, if necessary.

In approximately what percentage of all your cases do you operate on the fixing eye only? a. If on both eyes separately, why? b. If on both eyes at the same time, why?

The replies show that only a small number operate on the fixing eye alone. Many operate on each eye separately to obtain the desired result, and are guided in the second operation by a knowledge gained of the patient by the first. But very few ever operate on both eyes at the same time, and then only in case the squint is of high degree, or where one eye is very amblyopic, as they fear overcorrection or accident. If the vision in the squinting eye is good and defective rotation is chiefly or wholly found in the fixing eye, and particularly, if binocular single vision is hoped for, I think that the operation should preferably be performed on the fixing eye.

Do you operate when the muscles are paretic or paralytic? What are your indications, choice of operation and results?

Nearly all answer the first part of this question in the affirmative, usually advising advancement combined with tenotomy of opposing muscle of the same eye. Some advised advancement alone. The majority claim good results, especially from a cosmetic standpoint, and several stated that the patient was relieved from the annoyance of turning the head to such a large degree. Many, among whom are Reber, Gifford, Griffin, Ball of Pennsylvania, and Hubbell, advise operative procedures where other means have failed to relieve in one or two years. Stricker of Cincinnati claims excellent results from the use of prisms. He also suggests that as other muscles may subsequently be involved, the cosmetic effect following operation may come to naught. As before stated, I think it advisable, in these cases, to pass the sutures through the muscle or tendon and also through the capsule of Tenon and conjunctiva, without changing their relation to each other.

If the wearing of proper lenses or exercises have corrected the squint and made an apparent cure, is it well ever to operate in an attempt to obtain a better result so that the eyes may be parallel without lenses?

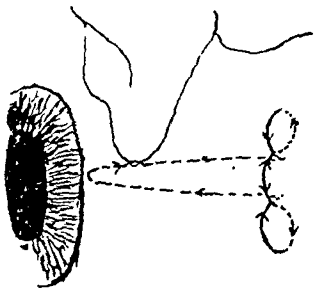

Fig. 2.—Method of inserting suture and location of knot if there is only one point of anchorage in the sclera.

Practically all answer this negatively. Some would operate for the remaining heterophoria present, especially if it is in high degree. Weeks operates where prisms are required, otherwise not.

What do you consider the best age for operation if a child from two to five years old develops squint and the proper lenses (if any are required) and exercises do not correct it? a. If a child has squinted since birth or within a few months of birth—so-called congenital strabismus? Is it a good plan in such cases to make an early approximate correction under general anesthesia?

Among those who consider operation advisable at as early a time as it is found that other means will fail are Holmes, Nance, Savage, Ziegler, Dean, King, Donovan, Dodd, Melville Black, Veasey, Bradfield, Seabrook, Carroll, Hills and Theobald. About 20 per cent. of the observers, among whom are Rogers, Hale, Roy, Baker, Culver, Snyder and Ellet, choose from 5 to 6 years as the best age for operation where good results may be expected. About another 20 per cent. prefer from 7 to 8 years. About 30 per cent. think from 10 to 12 years the best time. Knapp, Hood, Hill and Crane operate as early as the second and third years. A majority of the answers indicates that if the child has squinted since birth, or within a few months from that time, operation should be performed earlier than if the squint had developed later. Others advise waiting until various ages. A large majority of answers show that many do not believe in an approximate correction under general anesthesia, while some claim good results from this in certain cases, especially those of high degree, where other means have absolutely failed. When all means have failed, if the vision and field of rotation are good in each eye, especially if it is possible to develop fusion tendency by the amblyoscope, I think it advisable to obtain an early approximate correction under general anesthesia in order to assist the other factors in producing parallelism of the optic axes. It is well to be very careful not to overcorrect in cases of convergent squint.

In what percentage of your operative strabismic cases is binocular single vision obtained—extreme age limit, if any?

The percentages of success in obtaining binocular single vision vary greatly. Some claim to obtain it in scarcely any, others in a very large proportion of cases. The answers, as a whole, indicate that binocular single vision is often obtained. Several give an age limit from 8 to 10 to 15 years or older. Some cite instances where binocular single vision was obtained in adult life. Greenwood cites the case of a patient 20 years old; Würdemann one of 25; Wells one of 25; Hulen one of 39; Snyder one of 45, and Vail one of 50, each of whom recovered his binocular vision power. Several express the opinion that there is no age limit in these cases, and that binocular single vision might be obtained at any age. Many claimed that their recent increase of successes is the result of experience and the employment of better methods.

In what percentage of your cases do you use a general anesthetic?

A majority prefer the use of local anesthetics, except when advancements are to be performed on small or uncontrollable children or very nervous adults. Several use local anesthesia only when the child's age exceeds 6 to 8 years, as Weeks, Carrow and White. Others choose from 10 to 13 years as the usual age after which it is wise to use local anesthesia. Several never use general anesthetics for tenotomies, but always for advancements.

DISCUSSION.

DR. G. C. SAVAGE, Nashville, said that in treating simple heterophoria the only object is to equalize the tonicity of opposing muscles. In heterophoria of the recti, with cyclophoria, there are two objects in view in the operation; first, to equalize the tonicity of the muscles; second, to change the plane of the muscle. In orthophoria there is absolute rest of the muscles and basal centers, in distant vision, for the tonicity of the muscles is equal. In distant vision these eyes would cross except for the basal centers connected with the externi, and these are the right and left fourth basal centers. Whether the surgeon operates in one way or another, the object must be to equalize the tonicity, and to relieve basal centers. The tonicity may be altered by partial tenotomy, advancement, or shortening. By partial tenotomy of the stronger muscle its tonicity is diminished. By reducing the tonicity of this muscle Dr. Savage has put the fourth basal center at rest. If instead of tenotomizing the internus, it is decided to shorten the externus, its tonicity is thereby increased, making it equal to the stronger one, and thus relieving the fourth basal center. Complete tenotomy, however, should never be done. The LaGlieze operation is far beyond any other advancement operation that has thus far been devised. It is done without severing the tendon, the muscle being made to overlap its original site of attachment. If the knot should become untied the last state of the patient is not worse than the first. It is, too, an easy operation to perform.

DR. WILLIAM C. POSEY, Philadelphia, referred to De Wecker capsular advancement operation as particularly applicable to cases in which there is a divergence of not more than ten degrees. This operation causes not so much reaction as that which follows the advancement of the muscle itself, no such disfigurement and no limitation of rotation of the eye. He has employed it repeatedly, and believes that it is one of the best procedures for the correction of muscular anomalies. He thinks that the single stitch advancement operation, while technically most admirable, is not always to be depended on, as the muscle which demands advancement is so often thin and its tissues delicate, and he invariably employs the double stitch operation.

DR. JOHN E. WEEKS, New York, protested against the use of a stitch that contracts tendon and muscle and bunches them up into a cord; the single stitch does this. When the tendon and muscle are doubled up the reattachment is not a proper one; it takes place at a few points only, at and near the middle of the original insertion. The subsequent contraction of the muscle can not influence the movement of the eyeball as it should. One should select an operation that will spread the muscle out and permit of a broad linear reattachment.

DR. J. A. L. BRADFIELD, La Crosse, Wis., said that in cases of internal squint combined with hypertrophia, operation on the superior or inferior recti usually is of more importance than operation on the internal and external recti muscles.

DR. MARK D. STEVENSON said that the chief objection to the tucking operation advocated by Dr. Savage, lies in the unsightliness of the eye for a long time after the operation. These patients, often operated on for cosmetic purposes, are particularly sensitive just after an operation and do not like the lumpy appearance of the bunched muscle. There is no danger in cutting away the superfluous muscle tissue, which otherwise would take a long time to disappear, as at least an approximately good result may always be obtained. When the capsule and conjunctiva are included with the muscle in the loops of the suture, there can not possibly be much bunching of the muscle. This can be regulated somewhat by the distance between the two points of anchorage in the sclera. If the suture is left in one week, there is formed a broad, strong attachment of the muscle which need never occasion any fear of its slipping. Good scleral anchorage of the suture can nearly always be obtained, but the great difficulty has been to find a suture that would securely hold the tendon or muscle in place until it became reattached to the globe. Sutures that do not have a loop so as to securely grasp the muscle are very liable to cut their way between the fibers. Since there is no means of knowing how much the suture migh slip in such cases, it is impossible to know how much to over correct.

THE VALUE OF VARIOUS FORMS OF HEMOGLOBINOMETERS TO THE GENERAL PRACTITIONER*

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AND

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PHILADELPHIA.

We have undertaken this study because the general practitioner as a rule looks on hemoglobin instruments in general as a sort of medical toy, to be used largely by the consultant, and because we believe that the use of these instruments is practicable and that it does not take more time, nor nearly as much time with some forms, as is wasted over every patient by each of us.

In 1899 one of us read a paper before the Pennsylvania Medical Society in which the following points were noted:

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* Read in the Section on Practice of Medicine of the American Medical Association, at the Fifty-sixth Annual Session, July, 1905.

1. The necessity of blood instruments becoming part of the equipment of every practitioner.
2. The value of various blood examinations as pointing out the true diagnosis and treatment in many cases.
3. The fact that blood examinations done in a routine manner do not take more time than is constantly wasted in gossip with each patient.

We believe these points were well taken and that they are daily becoming better recognized. In order that we may have certain grounds for the choice of the particular instrument to be used we undertook the study of the Fleischel, the Dare and the Tallquist hemoglobin scale. The Oliver was not studied because the three instruments named above are the most widely used in this country and seem to be all-sufficient. The descriptions of each instrument and directions for their use can be found in all of the text-books on blood technic. and the reader is referred to them for information.

Comparison of Estimates by Different Instruments.

Case.	Examiner.	Fleischel.	Dare.	Tallquist.	Gowers.
1.	M.	88	82	80	85
	F.	80	84	80	80
2.	M.	80	76	80	80
	F.	82	76	80	82
	C.	76	74	80	80
3.	M.	82	84	80	84
	F.	88	82	80	84
4.	M.	84	86	85	80
	F.	88	86	85	88
5.	M.	76	72	75	75
	F.	70	72	70	75
	H.	80	74	70	78
6.	M.	40	42	50	..
	R.	40	42	50	..
7.	M.	90	90	60	..
	F.	88	85	70	..
8.	M.	87	90	90	..
	H.	86	88	85	..
9.	M.	92	94	95	..
	L.	84	85	86	..
10.	M.	82	75	80	..
	L.	86	80	80	..
11.	M.	42	60	50	..
	L.	45	60	45	..
12.	M.	65	65	65	..
	R.	65	65	65	..
13.	M.	72	76	75	..
	R.	74	78	75	..
14.	M.	84	85	85	..
	R.	83	86	85	..
15.	M.	86	88	85	..
	R.	85	88	85	..
16.	M.	72	74	75	..
	F.	72	75	75	..
	S.	76	80	75	..
17.	M.	72	74	75	..
	F.	72	75	75	..
	S.	76	80	80	..
18.	M.	82	86	80	..
	F.	80	83	80	..
	S.	82	84	80	..
10.	M.	76	78	80	..
	L.	74	78	80	..
20.	M.	52	58	60	..
	L.	58	56	60	..
21.	M.	78	76	80	..
	L.	76	76	80	..
22.	M.	77	73	75	..
	L.	72	75	70	..
23.	M.	70	74	70	..
	L.	73	76	75	..
24.	M.	65	63	60	..
	L.	67	65	65	..
25.	M.	40	38	40	..
	B.	38	38	40	..
26.	M.	76	80	80	..
	L.	80	82	80	..
27.	M.	78	86	80	..
	L.	80	84	80	..
28.	M.	90	90	90	..
	F.	88	92	90	..
	H.	84	93	..	..
29.	M.	80	80	80	..
	F.	82	84	75	..
30.	M.	82	88	85	85
	F.	80	84	85	85
31.	M.	64	68	65	65
	F.	66	68	65	68
	L.	62	66	65	65
32.	M.	80	82	85	75
	L.	78	84	85	75
33.	M.	72	73	75	74
	F.	78	74	75	74
	L.	70	72	75	78
34.	M.	80	80	85	82
	F.	84	82	85	84
	S.	88	81	85	84
35.	M.	88	86	85	85
	F.	92	86	85	86
	S.	96	86	85	86
36.	M.	54	52	50	..
	R.	56	50	50	..
	L	50	52	50	..
37.	M.	62	58	60	..
	L.	60	58	60	..
38.	M.	72	79	70	..
	L.	74	79	70	..
39.	M.	80	75	80	..
	H.	86	84	80	..
40.	M.	80	83	80	..
	H.	82	85	80	..
41.	M.	50	52	50	..
	H.	55	54	50	..
42.	M.	65	60	65	..
	H.	65	64	65	..
43.	M.	86	85	85	87
	F.	82	85	85	87
44.	M.	78	75	75	78
	F.	78	74	75	76
45.	M.	83	84	85	84
	F.	79	84	80	86
46.	M.	79	78	75	78
	F.	72	76	75	74
	S.	75	78	75	76
47.	M.	88	86	85	86
	S.	82	86	85	84
48.	M.	84	82	85	85
	S.	80	82	85	84
49.	M.	86	80	85	82
	F.	82	84	85	82
50.	M.	73	72	65	60
	F.	73	70	65	65
	F.	72	68	65	64

The studies were made mostly in the wards of St. Timothy's Hospital, Roxborough, Philadelphia. Fifty cases were studied with each instrument. Each case was studied at the same time with separate instruments. Recognizing that the personal element could play a part in the reading of any one of the instruments, because a given individual might more readily use one instrument than another, the observations were always made simultaneously by at least two individuals and frequently by three, and the results compared. Dr. Marcellus was used as the basis of comparison in all the cases and his observations are found in each estimate.

In the Tallquist readings the percentage is frequently estimated at 85, that is, between 80 and 90; or 75, between 70 and 80.

In order that an individual might not be prejudiced in the use of any given instrument, the reading was done in the following manner: First the blood was examined by the Fleischel, the scale being covered. Then the Dare instrument was used and the scale was not consulted. Finally, the Tallquist was used. This was done because the scale of the Tallquist is always before the observer. If a known percentage is present, one is very apt to deceive himself in the use of an instrument afterward in the same case. The reading of each instrument was then noted and the results compared.

Differences in the Reading of the Different Instruments When Used by a Single Individual.

Fleischel and Dare: 6 4 2 2 4 2 0 3 2 7 18
0 4 1 2 2 2=61 .... Average 3.3
Fleischel and Tallquist: 8 0 2 1 1 10 30 3 3
2 8 0 3 0 1 3 3=69.
Dare and Tallquist: 2 4 4 1 3 8 30 0 1 5
10 0 1 1 3 1 1=75.
Dare and Gower: 3 6 0 6 3 3 3 7 1 2 1 2
3 0 0 2=40.
Fleischel and Dare: 4 2 6 2 4 4 2 2 4 12 0
0 6 4 2 1 0 2 2=65.
Fleischel and Tallquist: 2 6 8 2 2 0 5 0 4 2
0 0 3 1 5 3 5 4=55................. Average dif.. 3.1
Dare and Tallquist: 2 2 2 2 4 3 2 0 6 0 0
3 3 3 2 5 1=46.
Dare and Gower: 5 2 8=15 .... Average dif.. 3.4
Fleischel and Dare: 4 7 5 3 2 5 1 3 1 1 2
2 6 1=39.
Fleischel and Tallquist: 2 2 0 0 0 0 1 3 2 4
3 1 1 8=27.
Dare and Tallquist: 2 9 3 3 2 5 0 0 1 3 1
3 5 7=44. .... Average dif., 3.3

In the fifty observations made by a single individual the variations seem to be very slight, indeed. If the reading is done with the Fleischel and Dare, the average difference in fifty cases was 3.3 per cent., with Fleischel and Tallquist 3.2 per cent., with Dare and Tallquist 3.3 per cent.

Personal Differences in Readings of Gower, Dare, Fleischel and Tallquist (Marcellus as Standard).

Tallquist: 5 0 0 0 0 5 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 5 0 0 0 0 0 0
0 0 0 0 0 0 0 5 5=0.5.
Fleischel: 8 4 4 8 6 4 0 2 8 1 12 4 0 0
2 2 1 0 4 0 4 0 2 2 6 2 5 3 6 4
4 0 0 2 2 4 2 2 2 2 2 2 2 6 2 4
8 4 8 2 4 2 2 6 2 5 3 4 0 4 7 4
Dif. 2,9 per cent.
Dare: 2 2 2 0 2 0 5 2 1 15 0 0 2 2 0 1
2 2 2 6 1 6 1 3 2 0 2 0 2 2 2 0
2 2 2 4 4 2 0 2 2 1 1 1 2 2 0 0
0 0 1 2 2 4 4 0 1 0 2 0 0 0 2...
1.85 per cent.

The personal differences in the use of the different instruments is also seen to be extremely slight. With the Dare the difference was 1.85 per cent, with the Fleischel 2.9 per cent., with the Tallquist 1 per cent. It is fair to state that the Tallquist shows a less percentage of personal differences, because there is no opportunity to judge of less than 5 per cent. difference. The greatest personal differences were with Dare, 15 per cent.; with Tallquist, 10 per cent.; with Fleischel, 8 per cent. The readings of the Tallquist scale were the same in 78 per cent. of the cases, in Fleischel 0.5 per cent., in the Dare 22 per cent. It will therefore be seen that the readings by different individuals is least likely to be just the same with the Fleischel instrument, but, as shown above, the differences are so slight that this is not a fault which interferes with the practical use of the instrument.

It will, therefore, be seen that, so far as practical purposes are, any one of the three instruments is sufficient.

The Dare and the Fleischel allow of more accurate fractional reading because of the arrangement of the scale. All of the scales are accurate.

It appears to us that the advantages of the various instruments may be fairly stated as follows: Of the Tallquist scale, first, the cost is much less, $1.50; secondly, the bulk is less, it may be carried in the inside coat pocket at all times without inconvenience.

The first advantage of the Dare and of the Fleischel is that both can be used either by day or night. The Dare is less bulky than the Fleischel and does not need a particularly darkened room for its use.

The greatest disadvantage of the Tallquist is that one is forced to use it in daylight. The second disadvantage is that an accurate observation can not be made between the multiples of ten, and one therefore feels less sure of the result. The disadvantages of both the Dare and Fleischel are, first, the cost (about $20), and, second, the bulk, though the Dare is less bulky than the Fleischel. In conclusion, we may say:

1. Any one of the instruments studied by us is sufficiently accurate for practical purposes.
2. No practitioner should neglect to use one of these instruments. The Tallquist scale is cheap and convenient.
3. The Tallquist scale can be used for routine observations, and either of the other instruments for detailed and more accurate work.
4. The Dare instrument is just as accurate as the Fleischel, and takes much less time to manipulate.
5. For the general practitioner, the value of these instruments may be fairly arranged as Tallquist, Dare and Fleischel.

A STUDY OF THE METABOLISM OF ATROPHIC INFANTS AND CHILDREN.*

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METABOLISM OBSERVATIONS ON INFANTS.

Infant's and children's metabolism has not been thoroughly investigated. The importance of such work has long been recognized, but the difficulties have appeared to be almost insurmountable. Hauser[1] reviewed the work which had been done on this subject up to 1900. In this summary, he called attention to numerous errors in the work and to the incompleteness and inaccuracy of many of the results. Metabolism investigations have little or no value unless continued uninterruptedly for several days. It is essential that the diet should remain unchanged and that the feces and urine should be completely segregated and the entire quantity of each collected during this period.

SOURCES OF ERROR, AVOIDABLE AND UNAVOIDABLE.

The chief difficulty is to collect the entire quantity of feces and urine separately. In most of the reported investigations there was either a direct loss of feces or of urine, or some of the urine escaped into the feces. In some of the earlier investigations the feces were collected on the baby's napkin and afterwards scraped off; this method, of course, resulted in an appreciable loss. In some instances the observations were restricted to one or two days, too short a time to insure accurate results. It was a long time before a satisfactory method was discovered for separating the feces of the metabolism period from the feces which belonged to the periods preceding and following it. Some of the earlier methods for the determination of fat and nitrogen were inaccurate. In some cases the food was not analyzed by the investigator, but analyses were accepted which had been made by other observers. In other cases, the usual diet was quite different from that of the metabolism period and no time was allowed for the organism to become accustomed to the change. In some instances in which the child was on a varied diet, the diet was suddenly restricted in order to reduce the number of analyses; such changes are apt to diminish the appetite and otherwise to affect the metabolism. Sometimes a quantity of food sufficient to last through the observation was prepared and samples of this food selected for analysis. This reduced the number of analyses, but the patient had to eat stale food, which may have influenced metabolism.

In addition to these errors, there still remain some that are unavoidable to a great extent and which alter the results more or less. Of these the following are the most important:

1. The effects produced on the metabolism by restraint and unusual surroundings.
2. Errors due to defects in the methods used to segregate the feces and urine of the metabolism period.

One of the ill effects which has been attributed to restraint and unusual surroundings is, that often during the time in which the metabolism is studied the feces are more watery and are passed more frequently than usual. This effect was not apparent in any of the observations which I am about to describe. In the first case, that of a child four and one-half years old, there was no restraint. Her daily habits and surroundings were unchanged. She remained at home and carried on her accustomed occupations. For the most part she remained in bed because of her condition. A trained nurse who had attended her for more than a year, continued to have the entire charge of her during the observations. This nurse was one whom I had employed many times. She understood perfectly what was required of her and I felt perfect confidence in her reliability.

In the second case, an infant one year old, the effects of restraint were rarely apparent after the first few hours. He played with toys and was happy and contented most of the time. He was always eager for his food and there was no apparent change in the number or character of the dejections with the exception of those which contained the charcoal which was added to the food to segregate the feces. He had not been accustomed to much attention, so that the constant attendance of a nurse was a source of great pleasure to him. I should say that the restraint and changed surroundings produced in his case a minimum amount of disturbance. The nurse in charge of the infant was exceptionally well adapted to the task. She was intelligent, very patient and absolutely trustworthy. During a four days' observation she never left the room for more than a few minutes at a time and she was up many times each night to see that everything was in order. A circumstance of great importance was that both nurses were deeply interested in the work. It is not going too far to say that the success of the work depended on these two nurses.

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* This work was awarded the Dalton Prize by the Massachusetts General Hospital.

[1] O. Hauser: (references to literature) Die Neueren Arbeiten über den *Stoffwechsel beim Kinde, Speziell beim Säugling* Zeits. f. Diatet. u. physikal. Therapie, vol. iii, 1899,-1900.

In my observations to distinguish the feces of the metabolism period, a weighed quantity of charcoal was added to the food at the beginning of each metabolism observation and to the first food which was given six hours after the close of each observation. Charcoal has a tendency to cause watery movements. To avoid this it should be finely powdered and given in the form of an emulsion and in not too large quantities. Sometimes only a portion of a dejection contains charcoal and the remaining portion looks as usual. It is not only difficult or perhaps impossible in such a case to separate, with absolute accuracy, the feces of the metabolism period from those immediately preceding or following it, but in some cases it is probable that the increased peristalsis, due to the charcoal, hurries a portion of the charcoal through the intestines in advance of the rest. This may become mixed with some of the feces which do not belong to the metabolism period; or if at the end of the period with feces that should be retained, but which in consequence of the presence of charcoal would be discarded. In this way, an error would be introduced that could not be rectified. Chocolate has been used by Bendix[2] and others in place of charcoal. This introduces an appreciable error, unless an equal quantity is reserved for analysis and the results included with the analysis of the food. This necessitates additional determinations of fat and nitrogen. I used chocolate at the beginning of one observation and charcoal at the end. The chocolate contained 0.1978 grm. of nitrogen and 2.6509 grm. of fat. This was equivalent to a little over 1 per cent. of the total nitrogen in the food and to about 2.5 per cent. of the total fat.

The method employed to segregate the urine in metabolism observations in adults can not be employed in similar observations in infants. In the case of adults, no food is taken for twelve or more hours preceding the observation. This is accomplished without inconvenience to the patients by beginning the observation in the early morning. This gives time for the products of metabolism which belong to the period preceding the metabolism observation to become excreted by the kidneys. The urine that is passed first in the morning is therefore discarded. The observation is concluded at the same time in the morning and the first urine passed is retained. Infants are necessarily fed at short intervals and prolonged fasting is therefore impracticable. This difficulty is probably obviated to a great extent by the fact that the infant takes the same quantity and kind of food at regular intervals. If, therefore, the infant's diet has remained unchanged for several days preceding the observation, it is probable that the products of metabolism which are excreted in the urine during a given twenty-four hours would approximate those of a corresponding twenty-four hours. The plan which I adopted was to omit one feeding before beginning the observation, and to begin to collect the urine about one hour after the first feeding was given. At the close of the observation the urine was collected for an hour after the last feeding.

In the case of the first child the diet was unchanged for at least two or three weeks before each observation was begun. In the first observation the diet was arranged primarily to conform to the digestion and appetite of the patient, rather than to furnish a certain number of calories, with a suitable proportion of proteids, fat and carbohydrates. It had been found by observation that certain things were digested better than others, and the diet consisted of these substances.

In the second observation, made a month later, the proteids and carbohydrates were increased and the fat was diminished. These changes were made more than two weeks before the second observation was begun, so that the organism had become accustomed to the changes. In the case of the infant the only change that was made was to increase the quantity of food during the second observation. This change was made at least a week before the second observation was begun.

To determine the quantity of nitrogen and fat that was actually ingested by the infant, the nursing bottle and nipple were rinsed with distilled water after each feeding and the rinsings were reserved for analysis. The nitrogen and fat were determined in the rinsings and the results were deducted from the total nitrogen and fat of the food.

Pepsin was used in the infant's food for both the first and second observations. An equal portion of pepsin was reserved for analysis in each observation. These two portions were mixed together and one set of fat determinations served for both observations. The nitrogen was determined as usual, that is, two determinations for each month. The results were added to those of the food.

A loss of urine or of feces is reported in every published observation on infant's metabolism with which I am familiar. I decided that if any such loss occurred during my investigations I would discard the results. A loss of urine occurred in three investigations not included in this paper, twice on the first day and once at the end of the fourth day. These observations were discarded. In the four metabolism investigations which are here reported there was absolutely no loss of urine or feces.

HISTORY OF CASE 1.

The first case was so interesting clinically that I give a brief account of it. I obtained the following history from the trained nurse who had attended the child for a year and a half previous to the time that I was asked to see her.

History.—Female, aged 4½ years, birth weight nine pounds, normal infant, breast fed until 7 months old. She gained well during this time. At 7 months, she was given barley water and milk, with one feeding of a proprietary food. Later this was increased to several feedings of the same food, with milk. The infant apparently did well and grew very fat. Up to the age of 22 months she had no illness, except influenza at 9 months. At 22 months she began to have indigestion. She was still taking the proprietary food, in addition to her other diet. A prominence of the abdomen was observed at this time. During the next six months she gained but little and her digestion was impaired. At this time, 2 years and 4 months old, she was seen by a specialist, who diagnosed the condition as intestinal indigestion. During the succeeding seven or eight months her weight remained about the same, and once in two or three months she had attacks of acute intestinal disturbance, consisting of fever, diarrhea and rapid loss of weight. During these attacks the food was reduced, and for some time afterward the diet was much restricted. When she was 3 years and 4 months old, she had such an attack, associated with bronchial catarrh. This attack appears to have been severer than any previous one. A slight edema of feet, hands and face was noted for the first time, and later the abdomen became enlarged and measured 25 inches. The quantity of urine in 24

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2. B. Bendix: Beiträge zum Stoffwechsel des Säuglings, Jahr. f. Kinderheilkunde, vol. xliii, 1896. Weitere Beiträge zum Stoffwechsel des Säuglings. Jahr. f. Kinderheilkunde, vol. xlvi 1898.

hours did not exceed 20 ounces, and at one time was much less. The dejections were loose or watery, with a great deal of mucus in them, and had a very strong odor. This condition lasted for several weeks; then the edema subsided and her weight was found to be 25 pounds. She was at this time 3½ years old. The urine was examined during this attack and a few casts were found. The temperature during the attack was normal. The digestion gradually improved and the dejections became normal in appearance, except that the color was pale. The next attack occurred when she was 3 years and 10 months old. There had been an interval of about three months between these attacks. This attack was not accompanied by edema, it lasted about one week, and she lost 2½ pounds. Just before this attack her weight was 26 pounds, 12 ounces. Two months later (4 years old) she weighed 28 pounds, 4 ounces. The abdomen measured 19 inches. She digested well. A month later she had another attack, not a very bad one, but she was unable to digest solid food and lost one-half pound a week for three weeks. Then edema appeared in face, feet and hands. The amount of urine was 29 ounces in 24 hours. Dejections were watery and contained mucus. The urine diminished in quantity during several days and the abdomen enlarged. The watery dejections increased in number. The urine diminished to 3 ounces on one day and then gradually increased in quantity after hot air baths, etc. The edema was very marked—general anasarca and ascites. Abdominal paracentesis was performed and 18 ounces of clear pale fluid was withdrawn. The temperature was normal during the attack. The urine showed a few hyaline casts. A second examination a few days later showed no albumin, no casts. The abdomen was aspirated a second time, two days later, and about 30 ounces of fluid withdrawn. The daily quantity of urine for about a week did not exceed 9 ounces. After the digestion improved the amount of urine increased to 50 or 60 ounces daily for a few days and the edema disappeared. About one month after the beginning of this attack, she was passing on an average from 40 to 50 ounces of urine each day, and she continued to pass this excessive quantity for several months afterwards. Her weight at this time, after the edema had disappeared, was 25 pounds, 3 ounces, and her age was 4 years and 4 months. In the next three weeks, her weight increased to 27 pounds and her digestion appeared to be as good as at any previous time.

Discussion of Diagnosis.—I saw the child in consultation with Dr. Herman T. Baldwin, of Chestnut Hill, for the first time, at this period. A number of physicians had seen her at different times and had not agreed on a diagnosis. Interstitial nephritis and tubercular peritonitis had been considered among the diagnoses. From the history and physical examination it seemed to me very unlikely that it was tubercular peritonitis, and repeated urine examinations made by Prof. E. S. Wood during the next few weeks failed to detect interstitial nephritis. It appeared to me to be a case of chronic intestinal disturbance similar to infantile atrophy and associated with periodic acute exacerbations of intestinal indigestion. The occurrence of so marked an edema and ascites under such conditions was unusual, and the persistent excretion of such a large daily quantity of urine made me suspect that the kidneys were not normal, although this symptom was present in similar cases that I had seen. I attributed any alterations in the kidneys, if such were present, to the irritative effect produced by the excretion of some substance or substances unknown, which had resulted from prolonged disturbances in metabolism.

Examination.—Physical examination did not show anything abnormal aside from emaciation, a moderate degree of pallor of the skin and visible mucous membranes, and very little edema of the hands and feet. It seemed to me that a study of the child's metabolism might throw light on the nature of the process. It also offered a reasonable hope that, by means of the knowledge thus gained, the diet could be adjusted in such a way as to evert the periodic attacks of intestinal indigestion.

Course of the Disease.—These anticipations were fulfilled, to some extent, by the result of two metabolism observations which were undertaken shortly afterward. The child's digestion steadily improved and she gained in weight during the succeeding five months. At the end of five months she had gained 4½ pounds and weighed 31½ pounds. Her weight at this time exceeded by several pounds that of any previous time, and she had never in the course of her illness had so little digestive disturbance. In May, there was a period of extreme heat, which lasted for ten days, and was responsible for a great many cases of diarrhea and vomiting among infants and children. This child had an attack which lasted several days and left her considerably prostrated. About three weeks after the attack, she was removed to the seashore and appeared to be improving in general condition. A few days afterward, she was taken ill quite suddenly, had a high temperature and a fleeting, patchy erythema which disappeared within a few hours and was not followed by desquamation. The throat was not abnormal and no symptoms appeared which threw any light on the diagnosis. The temperature remained elevated for three days. On the fourth day, the urine became markedly diminished, showed a faint trace of albumin, no sugar, and nothing abnormal in the sediment. The child became stupid and finally unconscious within 24 hours, and the urine was practically suppressed. She was treated energetically with hot air baths and pilocarpin; her bowels were moved freely, and as much water was introduced into her system as possible. She roused somewhat on the following day and recognized her surroundings at times. This improvement only lasted a few hours and then she became unconscious and all treatment was without effect. She died on the sixth day after the acute onset of the disease, with all of the symptoms of uremic intoxication.

Autopsy.—I performed an autopsy about six hours after death. The macroscopic appearances of the organs were not markedly abnormal. Tuberculosis and tubercular peritonitis had been suggested at different times by various physicians, but there was no evidence whatever of tuberculosis anywhere. Microscopically the only abnormalities of any consequence were very marked fatty changes in the renal epithelium, especially of the convoluted tubules. There was no evidence of acute or chronic inflammation in the kidneys. The liver contained an abnormally large quantity of fat, but otherwise was not abnormal. The spleen contained relatively few cellular elements, so that the reticulum was more prominent than usual. Otherwise nothing of consequence was apparent. The lungs and heart and lymph nodes and peritoneum were not abnormal.

METHOD EMPLOYED IN CASE 1.

Two metabolism observations were made on this child. Each observation lasted for four days. The first observation began on Dec. 18, 1902, and ended on Dec. 22, 1902. The weight at the beginning of the first observation was 11,716 grams (25 lbs. 14 ozs.), and at the end was 11,942 grams (26 lbs. 6 ozs.).

The method employed for distinguishing the feces of the metabolism period was the same as that used in similar observations on adults. The observation was begun in the early morning, after twelve hours' abstinence from food. Charcoal was given with the first feeding and the first dejection which contained charcoal was reserved for analysis. At the close of the observation food was withheld for twelve hours, and charcoal was added to the first feeding. The feces were collected for analysis until the charcoal appeared. At the beginning of the observation the first urine passed in the morning was discarded and at the end of the observation it was retained. The weight of the fresh food ingested during the four days' observation was 5,217 grams. The weight of the same food after drying was 908.5 grams. The weight of the dried feces for the same period was 138.79 grams.

The second observation began on Jan. 27, 1903, and ended on Jan. 31, 1903. The weight at the beginning of the second observation was 12,452 grams (27 lbs. 8 oz.), and at the end was 12,791 grams (28 lbs. 4 oz.). The weight of the fresh food ingested during the four days' observation was 6517 grams. The weight of the same food after drying was 1292.5 grams. The weight of the dried feces for the same period was 111.56 grams.

In both metabolism observations on this child, the gain in weight can not be ascribed solely to a new formation of tissue. The presence of a slight amount of edema in the tissues might account for variations of several ounces in the weight. In addition to this, the child was accustomed to receive an injection of water each day in order to obtain satisfactory movements from the bowels. It is possible that some of this water may have been retained in the intestines.

The following method was employed in both observations on this child and the results are arranged for comparison in parallel columns in Tables 1, 2 and 3. The food, both liquid and dry, was weighed each day, in two equal portions, one for the child and one for analysis. When dried substances like rusks or crackers were weighed, each large piece was broken into several smaller pieces and alternate pieces were used for analysis and for the child. Every particle of food was eaten in the presence of the nurse, who was ingenious and devised means to avoid loss of food; viz., butter was spread on the crackers, using a second cracker for a knife; both crackers were eaten; paper napkins were used to collect the crumbs, crumbs were then eaten; glasses containing cream, barley jelly or broth were rinsed with water, which was drunk by the child. The glasses containing liquids or semi-solids, reserved for analysis, were cleansed in the same way as those used by the child, so that the portion for analysis represented accurately the portion actually eaten. The child could always be induced to eat the quantity of food provided for the twenty-four hours, otherwise the work could not have been carried out. The same quantity was not always taken at corresponding meals, but the entire quantity was always consumed in the twenty-four hours.

The food corresponding to that which was eaten by the child each day, was acidulated with hydrochloric acid and evaporated on a steam bath. When almost dry, alcohol was added, and evaporated several times to drive out the water. The dried food was then ground to a fine powder; weighed; mixed thoroughly, and quartered down to a few grams for a single analysis. A similar procedure was adopted for a duplicate analysis. So that each test was made from a quartered sample weighing a few grams.

In my first metabolism observation on this child, I did not appreciate how much difficulty could be caused by the presence of filter paper in the food and feces. It was necessary to cleanse the patient after each dejection and to add the fecal matter thus obtained to the total quantity of feces. A weighed amount of filter paper was used for this purpose and this weight was deducted from the weight of the dried feces and food when computing the quantity of fat and nitrogen. The presence of filter paper in the food and feces made it very difficult to reduce them to a powder. It also introduced an error in the feces which I was only partially able to rectify. It was impossible to mix the powdered feces and filter paper so that each aliquot portion contained the same weight of feces and of filter paper. One sample would contain a little more feces and another would contain more filter paper. Two final determinations of the total fat in the feces showed a difference of about 5 per cent. This introduces an error of 2.5 per cent. This was in a second series of determinations. In the meantime, the feces had been mixed and quartered repeatedly for nitrogen determinations. Filter paper was not used in the subsequent observations. Instead the parts were cleansed by means of a rubber finger cot on the nurse's finger and the fecal matter was washed off the cot into the general receptacle; by this means none was lost.

The feces for each day were evaporated on a steam bath after acidulation with hydrochloric acid. The moist weight could not be determined. At the end of the four days' observation the drying was assisted by evaporating with alcohol several times. The feces afterwards were treated in the same manner as the food, i. e., ground to powder, weighed and quartered to a few grams for each analysis. Up to the time that the food and feces were powdered and weighed, the greatest care was taken that none should be lost. All dishes or apparatus that came in contact with the food or feces, were scraped and then washed with alcohol, the alcohol evaporated and the residue added to the food or feces as the case might be.

The child was accustomed to have enemata and without them the bowels did not move satisfactorily and she was liable to attacks of indigestion. The enemata were continued during the observations.

She was always required to pass urine before receiving an enema; and to avoid any loss of urine at the time of the movement, I arranged a simple device which succeeded perfectly. It consisted of a small tin funnel, which I flattened a little from side to side. A piece of rubber tubing was attached to the outlet and from thence led to a receptacle on the floor. During defecation the funnel was pressed firmly against the labia by means of a stout piece of twisted wire, which had a loop at one end through which the end of the funnel passed.

The urine was preserved with chloroform and made up to a definite volume so that analysis was simplified. The nitrogen was determined in the urine each day by Kjeldahl's method, using sulphuric acid, sulphate of potassium and sulphate of copper. In the case of the food and feces, a weighed portion of the dried substance was used. The urine nitrogen was determined in 5 c.c. of the diluted urine measured in a pipette. The same pipette was used in all determinations.

The fat in the food and feces was determined by the Soxhlet method, using petroleum ether. The petroleum ether was subjected to two distillations and tested for a residue before using. A weighed amount of the dried substance was treated with alcohol containing 2 per cent. of hydrochloric acid and evaporated almost to dryness; alcohol was then added and evaporated several times. When nearly dry, a quantity of sand sufficient thoroughly to separate the particles was stirred in and the mixture evaporated to dryness. The sand was thoroughly washed and ignited for several hours and a blank extraction made before it was used. In all fat determinations continuous extraction was maintained for from 48 to 72 hours. At the end of this time, fresh ether was added, extraction was continued for a time and then the ether was tested for a residue. Finally the ether containing the fat was evaporated and the flask and its contents were placed in a thermostat at 95° C. for several hours. After it was cooled and weighed the procedure was repeated and a second weighing made.

All the fat and nitrogen determinations were done in duplicate. When the results disagreed, a second series of determinations was made.

The method of preparing the food for analysis was devised by McCrudden.[3]. This method was thoroughly tested by him and found to be accurate. McCrudden says:

> This makes but one analysis of the food necessary and permits giving the patient an unrestricted diet. The food given is always fresh, and the inaccuracy due to keeping is overcome by weighing the patient's food and that for analysis at the same time. . . . In quartering, the food is thoroughly mixed with a large spatula and then is made into a little circular pile a couple of inches high. The pile is divided into four nearly equal quarters. Two opposite quarters are rejected and the other two well mixed, made into another little pile and quartered again. The mixing and quartering are repeated until there is about enough food left for one set of analyses. Samples for duplicate and triplicate analysis are obtained in the same way.

The mixing and quartering can be done conveniently on a large plate of glass.

A series of heat determinations were made of the food. These tests were made in Prof. Norton's laboratory at the Massachusetts Institute of Technology. The determinations were made in a modified Berthelot's bomb under the direction and with the assistance of Prof. Norton. I am glad of this opportunity to thank him for his great kindness to me. It was my intention to have determined the heat in the food, feces and urine from each observation, but a satisfactory method for drying the urine without loss of nitrogen was not discovered until too late.

TABLE OF RESULTS IN CASE 1.

TABLE 1.

December, 1902. Nitrogen Determinations. January, 1903.

	Nitrogen in grams.	Nitrogen in grams.		Nitrogen in grams.	Nitrogen in grams.
908 5 grams dried food contained..	....	20.2235	1292.5 grams dried food contained .	. . . .	28.0515
Urine nitrogen,			Urine nitrogen,		
December 19	3.3038		January 28	4.2647	
December 20	3 8671		January 29	4 5212	
December 21	3.4515		January 30	4.5896	
December 22	3 6611		January 31	4 3502	
	14 2835			17.7257	
Feces nitro. (138 79 grams dried wt.)	5.0242		Feces nitro. (111.56 grams dried wt.)	5.9185	
Total nitrogen excreted in feces and urine	19.3077	19.3077	Total nitrogen excreted in feces and urine. . . .	23.6442	23.6442
		+0 9158			+4.4103

Summary.

24.84 per cent. of total nitrogen excreted in feces.
3.62 per cent. dried feces consisted of nitrogen.
15.27 per cent. by weight of dried feces to dried food.

Summary.

21.09 per cent. of total nitrogen excreted in feces.
5 30 per cent. of dried feces consisted of nitrogen.
8.63 per cent. by weight of dried feces to dried food.

ANALYSIS OF RESULTS IN CASE 1.

An analysis of Tables 1, 2 and 3 show certain results. There was almost one-third more fat in the food in December than in January, and a very marked difference in the percentage of fat in the feces in the two observations. In December, 19.05 per cent. of the dried food consisted of fat; in January, 9.95 per cent. consisted of fat. In December, 40.19 per cent. of the fat ingested appeared in the feces; in January, 16.45 per cent appeared in the feces.

Contrary to what one would expect, the excessive quantity of fat in the diet in December and its markedly deficient absorption by the intestines did not appear to interfere very much with the absorption of the nitrogen. A comparison of nitrogen absorption in December and January shows 24.84 per cent. nitrogen excreted in the feces in December and 21.09 per cent. nitrogen excreted in the feces in January. This is quite striking, because it is believed that excessive quantities of fat not only impair the fat digesting and absorbing functions, but also interfere with the other digestive functions. The fat offers a mechanical hindrance to the action of the other ferments on the food and gives rise to abnormal decomposition products. It must be remembered, when comparing the December and January results, that the conditions were dissimilar in these two observations. In December, the child was recovering from a severe digestive disturbance. In January both her general condition and her digestion were considerably improved. The food in January contained very much less fat than in December and was a very much more suitable one in the relative proportions of fat, proteids and carbohydrates. In December, the diet had not been adjusted, but articles had been added that previous experience had shown to agree with the patient.

TABLE 2.

December, 1902. Fat Determinations. January, 1903.

	Weight in grams.		Weight in grams.
908.5 grams of dried food contained.	173 1096	1292.5 grams of dried food contained	128.6741
138.79 grams of dried feces contained	69.5797	111.56 grams of dried feces contained	21.1753

Summary.

40.19 per cent. of ingested fat excreted in feces.
19.05 per cent of the dried food consisted of fat.
50 13 per cent of the dried feces consisted of fat.

Summary.

16.45 per cent. of ingested fat excreted in feces.
9.95 per cent. of the dried food consisted of fat.
18.98 per cent. of the dried feces consisted of fat.

TABLE 3.

December, 1902. Heat Determinations. January, 1903.

1 gram of dried food . . .	temp. rise 2 15°	1 gram of dried food. . .	temp. rise. 1 975°
2 15° rise temperature .	large cal. 5 12	1.975° rise temperature .	large cal. 4.7
908 5 grams of dried food	4651.5	1292 5 grams of dried food	6074.8
Calories per diem ingested	1162.9	Calories per diem ingested	1518.7
1 gram of dried feces. .	temp. rise 2.57°	1 gram of dried feces. . .	temp. rise 2.18°
2 57° rise temperature	large cal. 6 12	2 18° rise temperature . .	large cal. 5.19
	848.9	111 56 grams of dried feces	578.8
ed in feces	212.2	Calories per diem excreted in feces	144.7

Summary.

Calories per diem ingested in food	1162.9	Calories per diem ingested in food	1518.7
Calories per diem excreted in feces	212 2	Calories per diem excreted in feces	144.7
Calories per diem actually absorbed	950.7	Calories per diem actually absorbed	1374 0
Calories per kilo weight per diem in food . .	98.3	Calories per kilo weight per diem in food	120.3
Calories per kilo weight per diem absorbed	80.3	Calories per kilo weight per diem absorbed	108.8
Gain in weight per diem in grams	56.5	Gain in weight per diem in grams	84.75

A consideration of the distribution of the calories in the component parts of the food will show this clearly. The heats of combustion of the total quantity of food taken in the December and in the January observations were accurately determined by means of a bomb-calorimeter. This permits a computation of the distribution of calories in the component parts of the food to be made with sufficient accuracy for purposes of comparison, which is all that is intended. The factor 6.25 was used to determine the amount of proteid material which corresponded to the nitrogen content of the food. This is incorrect for estimating the proteid in cream, but it was not possible to determine the nitrogen separately in the cream. The calories due to carbohydrates are estimated by difference. Table 4 shows the approximate distribution of the calories in the food for a single day in December and in January:

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[3] American Journal of Medical Sciences, March, 1903.

TABLE—4.

December.	Calories each day.	Approximate wt. in grams.	January.	Calories each day.	Approximate wt. in grams.
Proteid....	129.5	31.5	Proteid....	179.7	43.8
Fat.	402.5	43.2	Fat	299.2	32.1
Carbohydrate.	630.9	153.8	Carbohydrate	1039.8	253.6
Total	1162.9		Total	1518.7	
98.3 Calories per kilo per diem.			120.3 Calories per kilo per diem.		

The weight of the dried feces in December far exceeded the weight of the January feces, notwithstanding that much less food was ingested in December. Thus: December: Weight of dried food, 908.5 grams; of dried feces, 138.79 grams. January: Weight of dried food, 1292.5 grams; of dried feces, 111.56 grams.

This excess in December was due in part to the larger quantity of fat in the food, but the impaired state of the digestion and the general condition in December as compared with January must have exerted some effect on absorption.

In December, 50.13 per cent. of the weight of dried feces was fat; in January, 18.98 per cent. was fat.

Heat determinations of the food and feces in this case show that in December, 1162.9 calories were ingested each day and that 212.2 calories were lost in the feces each day. If one regards the difference as so many calories absolutely absorbed, it leaves 950.7 calories. This corresponds to 80.3 calories per kilo weight a day. Heat determinations of the food and feces in January show that 1518.7 calories were ingested each day and that 144.7 calories were lost in the feces. The difference is 1374 calories, or 108.8 calories per kilo weight a day. This number of calories per kilo is considerably more than is required to maintain the weight of a child of the age of this one. At any rate, in spite of impaired absorption, the child absorbed more than enough to maintain her weight; as a matter of fact, there was a steady gain in weight and improvement in general condition from this time until the following May.

HISTORY OF CASE 2.

The second case is that of an infant one year old, with a history of faulty feeding and chronic gastroenteric disturbance. Physical examination showed very marked emaciation and a moderate degree of anemia. Nothing abnormal was detected in the various organs. The temperature was subnormal during a greater part of the time that the infant remained under observation. Weight 5490 grams (12 lbs. 2 oz.).

METHOD EMPLOYED IN CASE 2.

Two metabolism observations were made on this infant. Each observation lasted four days. The first observation began on Oct. 27, 1903, and ended on Oct. 31, 1903. The weight at the beginning of the first observation was 5955 grams (13 lbs. 2 oz.), and at the end was 6135 grams (13 lbs. 8½ oz.).

The infant received seven feedings in each twenty-four hours. The first feeding of the metabolism period consisted of 75 c.c. of whole milk and 75 c.c. of barley jelly. In order to differentiate the feces of the metabolism period, a few grams of powdered chocolate were dissolved in 70 c.c. of the milk and barley jelly mixture. Thirty-five cubic centimeters of this mixture were added to the 150 c.c. of the first feeding and the remaining 35 c.c. were reserved for analysis. Each subsequent feeding consisted of 100 c.c. of whole milk and 100 c.c. of barley jelly. The food was peptonized for ten minutes before each feeding.

The first dejection occurred at 4:30 p. m., October 27, and contained no chocolate. The second dejection occurred at 2:30 a. m., October 28, and was intimately mixed with chocolate. It was soft, smooth, chocolate brown in color and contained more fluid than normal. Following this, there were three additional dejections on October 28, at 7:30 a. m., 12:30 p. m., and at 3:30 p. m. These dejections contained less fluid than the first one, and the last one contained only a trace of chocolate. The subsequent dejections were yellow in color, of normal consistency and slightly curdled in appearance. There were two dejections daily after the first 24 hours. Three grams of charcoal were given with the first feeding six hours after the first observation was concluded.

The total weight of the dried feces for the four days' observation was 55.7418 grams. The total quantity of food taken during this time was 5550 c.c.

A second metabolism observation on the same infant began on Nov. 13, 1903, and ended on Nov. 17, 1903. The infant's weight at the beginning of the observation was 5825 grams (12 lbs. 14 oz.) and at the end was 6120 grams (13 lbs. 8 oz.).

The infant received seven feedings in each 24 hours. The first feeding of the metabolism period consisted of 100 c.c. of whole milk, 75 c.c. of barley jelly, and 35 c.c. of a mixture composed of 3 grams of willow charcoal suspended in 40 c.c. of mucilage of acacia. Each subsequent feeding consisted of 110 c.c. of whole milk and 110 c.c. of barley jelly. The food was peptonized for ten minutes before each feeding. There were four dejections in the first 24 hours. A small portion of the first dejection was mixed with charcoal. This portion was reserved for analysis and the remainder was discarded. The second dejection was completely blackened with charcoal. The dejections throughout the observation were partly formed and were well digested. After the first 24 hours, they averaged three in number daily. Charcoal was given in the first feeding six hours after the observation was concluded. In the course of the observation, the infant refused 120 c.c. of one feeding. This amount was added to the rinsings for analysis.

The total weight of the dried feces for the four days' observation was 76.4583 grams. The total quantity of food taken during this time was 6115 c.c. The daily quantity of urine passed during both observations was somewhat less than one liter. It averaged about 900 c.c. At the beginning of the second observation, the urine was found to be cloudy when passed. The reaction was acid; there was a trace of albumin present; sugar absent. The sediment was moderately heavy and was composed chiefly of pus corpuscles. A moderate number of caudate cells, corresponding in size to those which line the pelvis of the kidney, were present in the sediment. No casts were found. This pyelitis continued for several weeks. There was never any evidence that the kidney itself was affected. The patient's general condition, appetite and digestion were not noticeably affected and he gained in weight. There was never any edema. The temperature during the first few days was slightly elevated. Previous to this time, the temperature, as in many cases of atrophy, was oftener subnormal than normal. During the early stage of the pyelitis the temperature rose to normal. The cause of the pyelitis could not be determined and the condition would not have been suspected without the urinary examination.

The following method was employed in both observations on the infant, and the results are arranged for comparison in parallel columns in Tables 5, 6 and 7. A method which I devised for segregating and collecting the urine and feces will be described in a future publication.

Throughout the work, the same pipettes were used for measuring fluids. I mixed the food each day and measured the quantity of each feeding directly into the feeding bottles by means of pipettes. A certain quantity of the food was measured into a flask each day and reserved for analysis. A few drops of formalin were added and the mixture was kept on ice until needed for analysis. After each feeding, the nursing bottle and nipple were rinsed with distilled water and the rinsings were reserved for analysis. A few drops of formalin were added to preserve the rinsings.

The urine was collected in glass flasks. The flasks were changed at short intervals and the urine which they contained was poured into a large flask. The small collecting flasks were rinsed each time with a little distilled water. At the end of 24 hours these rinsings were added to the day's urine and the whole was made up to a standard quantity with distilled water. This was done to simplify the nitrogen calculation. The urine was preserved with a little chloroform. Nitrogen determinations in the urine were made each day to avoid any loss of nitrogen from decomposition. The urine was tested for albumin and sugar, and the sediment was examined before and after each observation.

The feces were collected in evaporating dishes and treated as previously described.

The nitrogen was determined in the food, rinsings and urine by Kjeldahl's method, using sulphuric acid, potassium or sodium sulphate, and copper sulphate. For this purpose 5 c.c. of the urine and food were taken for each analysis.

The nitrogen in the feces, pepsin and chocolate was determined in a weighed amount of the dried substance. Fat determinations were made by Soxhlet method. In the case of the milk mixture and rinsings from nursing bottles, 10 c.c. were used for each analysis. This quantity was spread on filter paper that had been extracted with ether previously. This was dried in the thermostat at 95° C. and subjected to 72 hours' continuous extraction. The fat was determined in weighed amounts of the feces, chocolate and pepsin by the method described in connection with the first series of metabolism observations.

ANALYSIS OF RESULTS OF CASE 2.

An analysis of Tables 5, 6 and 7 shows certain results. The composition of the food remained the same in both observations. In the second observation the quantity was increased. In October, the total quantity of food contained 106.72 grams of fat; in November, it contained 119.13 grams of fat. The percentage of fat in the food in October was 1.92 per cent. In November it was 1.95 per cent. Otherwise expressed, each liter

TABLE OF RESULTS IN CASE 2.

TABLE 5.

October, 1903. Nitrogen Determinations. November, 1903.

October, 1903.	Nitrogen in grams.	Nitrogen in grams.
5550. c.c, food contained	. . . .	17.0625
Chocolate contained	. . . .	0.1978
Pepsin contained	. . . .	0.3584
		17.6187
Rinsings from feeding bottles contained	. . . .	0.1277
Total nitrogen ingested	. . . .	17.4910
*Urine nitrogen—		
Oct. 28 (21 hrs.)	2.8378	
Oct. 29	3.1025	
Oct. 30	3 0154	
Oct. 31 (27 hrs.)	3.5298	
	12.5155	
Feces nitrogen (55.7418 grams dried weight)	2.9818	
Total nitrogen excreted in feces and urine	15.5003	15.5003
		+1.9907

Summary,

17.06 per cent. of total nitrogen excreted in feces.

5.35 per cent. of dried feces consisted of nitrogen.

13.51 per cent. by weight of dried feces to dried food.

November, 1903.	Nitrogen in grams.	Nitrogen in grams.
6115. c.c. food contained	. . . .	18.5262
Pepsin contained	. . . .	0.3540
	. . .	18.8802
Rinsings from feeding bottles contained	. . . .	0.3171
Total nitrogen ingested	. . . .	18.5631
Urine nitrogen,		
November 14	3.3640	
November 15	3.4138	
November 16	3.2021	
November 17	3.5632	
	13.5431	
Feces nitrogen (76.4583 grams dried weight)	2.9327	
Total nitrogen excreted in feces and urine	16 4758	16.4758
		+2.0873

Summary.

15.79 per cent. of total nitrogen excreted in feces.

3.83 per cent. of dried feces consisted of nitrogen.

16.55 per cent. by weight of dried feces to dried food.

* The reason for such a marked apparent difference in the daily quantity of nitrogen excreted by the kidneys in the October observation is that on the first day the urine was collected for twenty-one hours, and on the fourth day for twenty-seven hours. This prevents a comparison of the nitrogen excretion of these two days with that of the other two days of the observation, but it does not alter the total excretion of nitrogen for the four days. It was necessary, in order to arrange my work, to begin the observation at about noon, and in the first observation there was an unavoidable delay of three hours. The only ways by which I could remedy the matter were either to shorten the time of collection of the urine for the first day, or else to postpone the observation. As it did not alter the result I chose the former method.

TABLE 6.

October, 1903. Fat Determinations. November, 1903.

October, 1903.	Weight in Grams.
5550. c.c. of food contained (19.22 grams of fat per liter)	104.3955
Chocolate contained	2 6509
Pepsin contained	0.0897
(one set determinations for Oct. & Nov.)	107.1361
Rinsings from feeding bottles contained	0.4163
Total fat ingested	106.7198
55.7418 grams of dried feces contained	12.5905

Summary.

11.80 per cent. of ingested fat excreted in feces.

1.92 per cent. of the food consisted of fat.

22.59 per cent. of the dried feces consisted of fat.

November, 1903.	Weight in Grams.
6115. c.c. of food contained (19.48 grams of fat per liter.)	119.8540
Pepsin contained	0.0915
	119.9455
Rinsings from feeding bottles contained	0.8100
Total fat ingested	119.1355
76.4583 grams of dried feces contained	27.7565

Summary.

23.30 per cent. of ingested fat excreted in feces.

1.95 per cent. of the food consisted of fat.

36.30 per cent. of the dried feces consisted of fat.

of food contained in October 19.22 grams of fat, and in November 19.48 grams of fat. It will be seen that the fat content was approximately the same in both observations. In November, there was a much greater loss of fat in the feces, and the weight of the dried feces was considerably more than in October. The appearance of the feces when passed was not dissimilar in the two experiments and looked much more normal as a rule than is usual in cases of atrophy.

In October, the dried feces weighed 55.74 grams and contained 11.80 per cent. of the fat ingested. In November, the dried feces weighed 76.45 grams and contained 23.30 per cent. of the ingested fat. Notwithstanding the increased quantity of feces in November and double the percentage of fat which they contained as compared with October, the percentage of nitrogen lost in the feces in November was less than in October. In October the feces contained 17.06 per cent. of the nitrogen ingested, and in November, 15.79 per cent.; so that the greater loss of fat in the feces in November did not increase the loss of nitrogen. In both observations, the nitrogen retention was about the same, viz.: October, + 1.9907 grams; November, + 2.0873 grams.

TABLE 7.

October, 1903.		November, 1903.	
	Heat Determinations.		
	grm. dried wt.		grm. dried wt.
50. c.c. of food......	3.7009	50. c.c of food......	3 7769
	rise temp.		rise temp.
3.7009 grams dried food	8.354°	3.7769 grms. dried food	8.659°
	large cal.		large cal.
8.354° rise temperature	19.881	8. 659° rise temperature	20.609
5550. c.c. of food.....	2206.8	6115. c c. of food....	2520.4
Calories per diem in food..........	551.7	Calories per diem in food	630.1
Calories per liter in food...........	397 6	Calories per liter in food...........	412.1
Summary.		Summary.	
Calories per diem in food . .	551.7	Calories per diem in food. .	630.1
Calories per diem in rinsings	4.1	Calories per diem in rinsings	10.6
Calories per diem ingested...	517 6	Calories per diem ingested	619.5
Calories per kilo. weight per diem ingested . . .	90.5	Calories per kilo. weight per diem ingested	103.7
Gain in wt. in grms. per diem	45.	Gain in wt. in grms. per diem	73.75

There was no apparent difference in the infant's condition in the two observations. He ate, slept and digested about the same. In the interval between the first and second observations the urine was not examined, but as has been stated, at the beginning of the second observation a pyelitis was found. A little less urine was passed during the second observation than during the first, but the nitrogen excretion was not interfered with. The proportion of urine nitrogen to that of the food was about the same in both observations. In October, the nitrogen excreted in the urine was equivalent to 71.5 per cent. of the nitrogen in the food, and, in November, it was equivalent to 72.95 per cent. of the food nitrogen. So far as the absorption of fat in the two observations was concerned, it was evidently influenced by something besides the percentage of fat in the food. The second observation was as near a control of the first as it was possible to make it. The only difference was 125 c.c. more food each day, without any appreciable difference in its composition. The variation in the fat absorption without any discoverable reason, affords an instance of the impossibility of drawing accurate conclusions from a limited number of observations, even when the observations are very carefully carried through.

The heats of combustion of the total quantity of food taken in the October and in the November observations were accurately determined by means of a bomb-calorimeter. Table 8 gives an approximate estimation of the distribution of calories in the component parts of the food for a single day in each of the two observations. The factor 6.33 was used to convert the nitrogen into its equivalent of proteid. This is somewhat inaccurate because part of the proteid was present in a different form in the barley jelly. The results are sufficiently accurate for a rough comparison, which is all that is intended. The calories due to carbohydrate are estimated by difference.

TABLE—8.

October.	Calories each day.	Approximate wt. in grams.	November.	Calories each day.	Approximate wt. in grams.
Proteid.....	110 7	27.	Proteid.....	120.2	29.3
Fat ...	242.7	26.1	Fat	278.7	30.
Carbohydrate.	198.2	48.3	Carbohydrate.	231.2	56.4
Total	551.6		Total	630.1	
90.5 Calories per kilo each day.			103.7 Calories per kilo each day.		

VARIATIONS IN WEIGHT.

Conclusions derived from a consideration of the variations in weight during a metabolism observation of a few days' duration, are valueless unless the metabolism observation includes a respiration experiment. Without this, it is impossible to say to what a gain or loss of weight is due. In some cases, changes in weight are due to variations in the contents of the bladder and intestines at the beginning and at the end of the observation; in some cases water is retained in the organism. It has been shown by Rubner,[4] Freund[5] and others[6] that considerable quantities of nitrogen may be retained in the organism associated with but slight gain in weight or even with a loss in weight. The proteid gain in weight in such a case is balanced by a loss of fat tissue. Until these facts were appreciated great importance was attached to variations in weight during an observation and many valueless conclusions resulted. Any gain in weight associated with nitrogen retention was ascribed to the formation of new tissue. Table 9 furnishes some interesting information. It will be seen that there was a gradual gain in weight during three and one-half months from 5490 grams to 7220 grams. During this period on several occasions there occurred marked daily variations in weight. These sudden changes could not always be explained by the quantity or character of the food nor by the condition of the digestion. A probable explanation is that variations in the contents of the bladder and intestines caused it.

After the first metabolism observation in October, a night feeding was omitted, and the weight fell; but later, when the night feeding was resumed and in addition the twenty-four hour quantity of food was in-

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[4] M. Rubner u. O. Heubner: Die natürlichen ernährung eines Säuglings. Zeits. f. Biologie, vol. xxxvi. 1898. Die Künstliche Ernährung eines normal u. ein Atrophischen Säuglings Zeits. f. Biologie, vol. xxxviii, 1899.

[5] W. Freund: Chlor und Stickstoff im Säuglingsorganismus, Jahr. f. Kinderheilkunde, vol. xlviii, 1898.

[6] The following list comprises other important articles which I have consulted:

O. Huebner: Gatrachtungen u. Stoff und Kraftwechsel der Säuglings, etc. Berl. klin. Wochft., 1899.

W. Camerer: Der Stoffwechsel des Kindes, 1896.

A. Wassermann: Ueber Biologische Mehrleistung des organismus bei der Künstlichen Ernährung von Säuglingen, etc. Deuts. med. Wochft., vol. xxix, 1903.

Tsuboi: Ueber Stickstoffausscheidung aus dem Darm. Zeits. f. Biologie, vol. xxxv, 1897.

TABLE 9.—WEIGHT AND FOOD CHART OF INFANT.

Date.		Weight in Grams.	Qua'ty. of Food 24 hrs.	Character of Food.	Dejections.
Oct.	4	5490	850 c.c	Equal parts of whole milk and barley jelly, peptonised.	Always some casein lumps: oftentimes offensive odor; some mucus: average number 2 to 4 daily.
"	5	5450	920 "		
"	6	5370	1050 "		
"	7	5300	1050 "		
"	8	5250	1260 "		
"	9	5450	1260 "		
"	10	5420	1260 "		
"	11	5410	1400 "		
"	12	5520	1400 "		
"	13	5520	1400 "		
"	14	5600	1400 "		
"	15	5620	1400 "		
"	16	5680	1400 "		
"	17	. .	1400 "		
"	18	. .	1400 "		
"	19	. .	1400 "		
"	20	. .	1400 "		
"	21	. .	1400 "		
"	22	. .	1400 "		
"	23	. .	1400 "		
"	24	. .	1400 "		
"	25	. .	1400 "		
"	26	. .	1400 "		
"	27	5955	1400 "	Metabolism obser-on.	
"	28	. .	1400 "		
"	29	. .	1400 "		
"	30	. .	1400 "		
"	31	6135	1400 "		
Nov.	1	. .	1400 "		
"	2	. .	1400 "		
"	3	5900	1200 "		
"	4	5700	1240 "		
"	5	5690	1320 "		
"	6	5730	1320 "		
"	7	5740	1320 "		
"	8	5740	1320 "		
"	9	5710	1100 "		
"	10	5850	1540 "		
"	11	. .	1540 "		
"	12	. .	1540 "		
"	13	5825	1540 "	Metabolism observation.	
"	14	. .	1540 "		
"	15	. .	1540 "		
"	16		1540 "		
"	17	6120	1540 "		
"	18	5950	1540 "		
"	19	5740	1540 "		
"	20	5710	1540 "		
"	21	5670	1540 "		
"	22	5890	1540 "		
"	23	5820	1540 "		
"	24	5900	1540 "	Whole milk ¾. Barley jelly ¼.	
"	25	. .	1540 "		
"	26	5870	1540 "		
"	27	5950	1540 "	Pepsin omitted.	
"	28	6 30	1540 "		
"	29	5700	1540 "		
"	30	5820	1540 "		
Dec.	1	5750	1540 "		
"	2	5980	1540 "		
"	3	6130	1540 "		
"	4	6130	1540 "		
"	5	6260	1540 "		
"	6	6210	1540 "		
"	7	6370	1540 "		
"	8	6370	1540 "		
"	9	. .	1540 "		
"	10	. .	1540 "		
"	11	. .	1540 "		
"	12	. .	1540 "		
"	13	. .	1540 "		
"	14	. .	1540 "		
"	15	. .	1540 "		
"	16	. .	1540 "		
"	17	. .	1540 "		
"	18	6185	1540 "	Did not take food well for several days preceding this weight.	
"	19	. .	1540 "		
"	20	. .	1540 "		
"	21	. .	1540 "		
"	22	. .	1540 "		
"	23	6495	1540 "		
"	24	6430	1540 "		
"	25	6390	1540 "		
"	26	6410	1540 "		
"	27	6350	1540 "		
"	28	6440	1540 "		
"	29	6360	1540 "		
"	30	6 70	1540 "		
"	31	6510	1540 "		
Jan.	1	6370	1540 "		
"	2	6590	1540 "		
"	3	6540	1540 "		
"	4	6610	1540 "		
"	5	6630	1549 "	Broth and beef juice; and bread added to his diet.	4 to 7 dejections daily; same character viz; offensive and contained mucus.
"	6	6730	1540 "		
"	7	6820	1540 "		
"	8	6700	1540 "		
"	9	6910	1540 "		
"	10	6920	1540 "		
"	11	7020	1540 "		
"	12	6940	1540 "		
"	13	7110	1540 "		
"	14	7110	1540 "		
"	15	7050	1540 "		
"	16	7110	1540 "		
"	17	7190	1540 "		
"	18	7060	1540 "		
"	19	7230	1540 "		
"	20	7150	1540 "		
"	21	7250	1540 "		
"	22	7220	1540 "		
			1510 "		

creased, the weight remained practically the same as during the first observation. The day following the second observation in November, the infant lost 170 grams, although the food remained unchanged. This illustrates what has been said about the valuelessness of conclusions drawn from partial metabolism observations. In all probability the marked apparent gain in weight during each observation was due to something besides the formation of new tissue and fat. Following the second observation the weight remained about the same for two weeks, although the food was strengthened. During the last month additions were made to the diet, namely beef juice, broth and bread, and the gain in weight, whether due to this or not, was steadier and more rapid than at any time previous.

UNWARRANTABLE CONCLUSIONS.

In this connection I wish to add a few words about the tendency to draw conclusions based on uncertain evidence. This is especially evident in metabolism work. It would seem as if the obscurity of the whole subject would restrain any impulse to express one's self positively about causes and results, but to judge from the writings on the subject, it would appear to inspire confidence and an inclination to formulate laws. As has been pointed out, there are many possible sources of error in the work, some of which can not be avoided. In addition to this, the number of observations on infants is limited. The power of absorption and of utilization of the food must vary in different atrophic infants, depending in part on the degree of disturbance present, and especially on the character of the food. It is reasonable to suppose that it varies at different periods in the same infant. Furthermore, with the exception of Rubner's investigations, all the metabolism observations on infants are incomplete, that is, they consist solely of determinations of the fat and nitrogen absorption and excretion. A formation or destruction of tissue can not be determined from such observations. Metabolism observations, however, more especially the complete ones, have established a number of important facts connected with the metabolism of infantile atrophy. They have shown a diminished power of absorption by the intestines for cow's milk and other artificial foods, but they do not explain the cause of this failure to absorb. They also have shown that a greater expenditure of energy is required to metabolize these artificial foods than is required to metabolize human breast milk. Furthermore, enough has been done in this direction to show that the cause or causes of infantile atrophy can not be discovered by metabolism investigations. This must be left to other lines of research.

This work was done in the Pharmacological Laboratory of the Massachusetts General Hospital in 1902-3 and 1903-4. I wish to thank Dr. Franz Pfaff, director of the laboratory, and his assistant, Dr. Vejux-Tyrode, for valuable advice and assistance. I am especially indebted to Mr. F. H. McCrudden for careful instruction in the methods which are employed in metabolism work.

Radium of Little Use in Skin Diseases.—Danlos concludes from his personal observations (*Bull. et Memoires de la Soc. Med. des Hôpitaux*) that there are only three skin disorders in which radium has a real value—tuberculous lupus, pearly epithelioma and vascular nevus. *Even in these its therapeutic value is a limited one. We have other older and more* effective remedies, the *x*-ray for example. *We may admit for* it some advantages for use in the larynx and nasal fossæ, especially if its cost is reduced.

THE PATHOLOGIC EFFECTS OF ALCOHOL ON RABBITS.

AN EXPERIMENTAL STUDY.*

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VARIETY OF ALCOHOL USED AND METHOD OF FEEDING THE ANIMALS.

One hundred and twenty rabbits were utilized in the experiments with alcohol. Most of these animals were fed on absolute alcohol diluted; some on an inferior form of whisky known as "Calumet," 70, proof 33.6 per cent. In order to be certain of the exact dosage, the alcohol and whisky were introduced into the stomach through a catheter. The catheter is easily introduced into the stomach of a rabbit; the animal is placed flat on its back and strapped to an animal board; the ears are then firmly grasped, the mouth opened by means of a large forceps and the tube forced into the stomach. By means of a funnel attached to the end of the catheter, the liquid quickly enters the stomach; with practice the introduction of the tube becomes a matter of great ease and one need not fear in any way injuring the esophagus or entering the trachea and thus producing an aspiration pneumonia. After the practice of a month all complications were avoided and in none of the autopsies could any injury be discovered in the esophagus or was there any evidence of an aspiration pneumonia.

TIME TAKEN TO PRODUCE INTOXICATION AND RECOVERY.

In from 5 to 15 minutes after feeding, the animal shows signs of intoxication, the movements become sluggish and unsteady and when urged on he is unable to move. This intoxication passes on into a complete stupor from which the animal cannot be aroused. It awakens in from 3 to 5 hours and appears well on the following day. From an average drawn from all the histories, it can be stated that intoxication begins 14 minutes after feeding, complete intoxication 32 minutes after feeding, and that the intoxication disappears in 3 hours and 5 minutes from the time of feeding. These conditions vary much with the dosage, weight of the animals and apparently individual peculiarities (species). In general it can be stated that the quicker the intoxication comes on the more rapidly does the influence of the alcohol pass off.

QUANTITY OF ALCOHOL ADMINISTERED.

The quantity of alcohol taken by the rabbits varied very much according to the size and strength of the animal, and according to the duration of its life. On account of a sudden loss of weight or apparent illness the doses at times had to be discontinued for days until the animal was again in a normal condition. The daily doses varied between 5 and 8 c.c. of absolute alcohol diluted in from 15 to 30 c.c. of water, or 10 to 20 c.c. of whisky diluted in 10 or 20 c.c. of water. The average of the weekly doses in various rabbits varied very much; thus, while one rabbit consumed a weekly average dose of 40 c.c. of absolute alcohol, another consumed 48 c.c.; and, again, while another rabbit consumed a weekly average dose of 96 c.c. of whisky, another consumed 110 c.c.

The smallest weekly dose of alcohol taken was 20 c.c., the largest 50 c.c.; the smallest weekly dose of whisky 94 c.c., the largest 136 c.c. Of greater interest is the total quantity of alcohol and whisky taken by the animals. The animal that lived longest consumed over 10 liters of absolute alcohol, another rabbit consumed 7.5 liters, while another consumed over 18 liters of whisky.

VARIATIONS IN WEIGHT.

Most animals gain in weight for a time at first; the weight then remains stationary and there is a rapid fall in weight when the animal is about to die. Rapid emaciation always signifies approaching death. When there is a loss in weight during the first month one can predict an early death. The daily variations in weight during the first month show an average gain of from 5 to 8 grams; during the second month from 10 to 20 grams; during the remaining months there is practically a stationary weight, and during the last month a marked fall averaging from 10 to 20 grams.

The monthly variations in weight taken as an average from all animals was 12.5 grams.

VARIATIONS IN TEMPERATURE.

The temperature falls from 0.1 to 0.5 degrees when the intoxication begins and from 1 to 1.5 degrees when complete intoxication sets in; then gradually rises and is normal the next day.

From the average of all the rabbits the normal temperature is 104 F.; the average temperature at the beginning of intoxication, 103.8; in complete intoxication, 102.9; when the temperature falls below 102 F. the animal dies from the immediate effect of the alcohol without regaining consciousness.

BLOOD EXAMINATIONS.

A large number of blood examinations were made; these examinations consisted in the counting of the number of red and white blood cells by means of the Zeiss-Thoma apparatus; estimation of the hemoglobin by means of the Fleischel apparatus; also staining dried spreads with Ehrlich's triple stain. It was found that while the number of red and white cells are not diminished in any case except when the animal was about to die the percentage of hemoglobin sinks rapidly after the first week and gradually runs to half its normal.

The number of red blood corpuscles in a normal rabbit varies between five and six millions in a c.mm. The number of leucocytes varies between 5,800 and 14,000, the average being 10,000. This average was found to be maintained under the influence of alcohol until the last month of feeding, when the red cells fell as low as two million and the white cells as low as 5,100. The percentage of hemoglobin in the normal rabbit before feeding varies between 80 and 90 per cent. during the first month of feeding with alcohol the average fall is to 75 per cent., during the middle month of feeding 62 per cent., and during the last month of feeding 45 per cent.

The blood spreads show in the rabbit under normal conditions the following relations: Small lymphocytes, 45 per cent.; large mononuclear, 15 per cent.; eosinophiles, 32 per cent.; undetermined, 8 per cent.

This relation is pretty nearly maintained during the feeding of the animal with alcohol except during the last month of its life, when the following percentage is found: Small lymphocytes, 48 per cent.; large mononuclear, 10 per cent.; eosinophiles, 40 per cent.; undetermined, 2 per cent.

The eosinophiles, which to a great degree represent the polymorphonuclear cells in the human being, being largely increased in number.

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* From the Pathological Laboratory of the Johns Hopkins University and Hospital.

EFFECT OF ALCOHOL ON THE GASTRIC CONTENTS.

The gastric contents were examined in a large proportion of animals; free hydrochloric acid, which was present at first, gradually became lessened in quantity and often disappeared. At the beginning of feeding with alcohol the average percentage of free hydrochloric acid equaled 0.345 per cent.; this was frequently lessened in the course of one month to 0.213 per cent., and in the course of two months to .003 per cent.

EFFECT OF ALCOHOL ON THE URINE.

The urine was frequently examined in a certain number of animals. At the beginning of treatment, neither albumin nor casts could be found in any urine. Of the specimens of urine examined in 21 animals, 7 showed constantly marked traces of albumin after two months' treatment with alcohol and two slight traces, while casts were found in 5 instances. Specimens of urine from 3 other animals showed occasional traces of albumin. Of the 5 cases in which albumin and casts were found, kidney lesions were detected after death, as will be shown in the pathologic report. It must be stated, however, that notwithstanding the absence of albumin and casts in certain other cases, changes in the kidneys were detected at the autopsy.

EFFECT OF ALCOHOL ON FEMALE RABBITS.

There can be no question but that alcohol has a marked tendency to produce abortion in rabbits. In a series of 38 pregnant rabbits, 20 died of septicemia due to abortion. The organism of rabbit septicemia was found in all cases. The animals had been entirely isolated from each other. Of the remainder, 9 had constant abortions, none of the young being born at full term. Three had their young normally, but these all died in a few days after birth.

EFFECT OF ALCOHOL ON DURATION OF LIFE.

While the tolerance of any given animal could not be positively foretold, young rabbits, pregnant females, and those weighing under one thousand grams were the most susceptible. Certain rabbits were found to be so resistant that they seemed capable of tolerating daily intoxicating doses of alcohol for an indefinite period. Thus, one rabbit was given alcohol for over four years; others were fed with alcohol for three and a half and for three years. These animals had the best of care and were kept under excellent sanitary conditions. On the other hand, some of the rabbits died from acute intoxication after a few doses, and the majority succumbed after shorter or longer periods of time, with gradual loss of weight and exhaustion. If especial care was taken to lessen or to intermit the dose of alcohol when the animal began to lose weight, it was found possible later to increase the dose and to keep a considerable number of the rabbits alive for an indefinite period.

CAUSES OF DEATH AND PATHOLOGIC LESIONS.

The causes of death in the animals varied; many died during the first days or months of feeding of acute intoxication, others died in convulsions, still others of progressive emaciation or septicemia, while one animal died directly from dropsy due to a marked cirrhosis of the liver.

Complete autopsies were made on all animals; specimens were taken from all organs and hardened in absolute alcohol, Müller's fluid and Zenker's solution, and side by side with each specimen were placed the specimens from a normal rabbit; so that a comparison of sections after cutting could easily be made.

In order to simplify the work, the lesions found in the various organs will be taken up separately.

Heart.—The heart muscle showed in the great proportion of those rabbits which died a marked degree of fatty infiltration which was absent in the rabbits which were killed after cessation of the use of alcohol, showing that the fatty degeneration is not a permanent condition even though it be produced by the action of the alcohol.

This fat was diffuse and finely granular. As is well known, rabbits are apt to develop fatty degeneration of the heart muscle when kept in captivity; but it was found that rabbits fed on alcohol develop this condition of the heart much more markedly than the control animals not fed on alcohol. In order to settle this matter more definitely, 10 rabbits were kept in the open air; five of these were fed on alcohol; in 4 of the 5, marked fatty degeneration of the heart muscle developed in from two to three months, while the heart muscles of those not fed on alcohol remained perfectly normal. There can be no question but that in most animals fed on alcohol, fatty degeneration of the heart muscle is often a very frequent early manifestation. After the third or fourth month of feeding with alcohol, a sclerotic or atheromatous patch was now and then found on the inner surface of the aorta or of other blood vessels. The aorta showed here and there small yellowish areas which on microscopic examination revealed a connective tissue thickening in the subendothelial layer of the vessel. The muscular coat showed occasionally a rather marked fatty degeneration as indicated by a deposit of fatty granules in this layer. The same changes were occasionally found in the smaller vessels, though not usually, so marked. These lesions were present, however, too inconstantly to be attributed with any certainty to the action of alcohol, especially as similar lesions are occasionally found in animals which have not received alcohol.

Liver.—The liver, in a few instances, showed a rather coarse lobular aspect; the edge showing a notched appearance as if notched along the interlobular lines. On microscopic examination there appeared in these instances a marked deposition of fine and coarse oil drops in the liver cells; quite diffuse and abundant; bands of connective tissue were found running along the interlobular lines, containing occasionally an increase in lymphoid cells. These bands were richly infiltrated with fine molecular fat. Similar fine fatty granules were in the hepatic cells, especially along their borders, apparently in the capillary walls. There were some oval pigmented cells at times in the bands of interlobular tissue; there was present occasionally a monolobular cirrhosis. Necrosis of the liver cells occasionally occurred, either singly [illegible] At times the blood vessels were found [illegible] tunica adventitia. In many instances, the liver was perfectly normal; in four instances, the liver was found somewhat cirrhotic, and in one instance markedly so, abdominal dropsy accompanying the cirrhosis.

Genuine cirrhosis has not been satisfactorily reproduced in the experiments which lends support, as Welch points out, to the opinion held by many that in human beings alcohol acts only indirectly in leading to cirrhosis of the liver, or that special predisposing or associated

SYNOPSIS OF RABBIT EXPERIMENTS.

No.	A—Adult. Y—Young.	Date of Beginning of Experiments.	Wt. at Beginning in Grams.	Quantity of Alcohol Fed Per Diem in C.C.	Total Quantity of Alcohol Consumed in C.C.	Date of Death.	Wt. at Death in Grams.	Clinical Cause of Death.	Principal Lesions Formed at Death.
1	A	12/7/1893	1510	5 8 abso. alcohol	2			. .	Fatty heart, kidneys and liver.
2	A	12/7/1893	1720	5-8 abso. alcohol	3			.	Fatty heart, kidneys and liver.
3	A	12/7/1893	1635	5 8 abso. alcohol	3			ion	Fatty
4	Y	12/14/1893	982	5 8 abso. alcohol				. .	Fatty
5	A	12/14/1893	2390	5 8 abso. alcohol	1			. .	Liver cirrhotic; kidneys fatty.
6	A	12/19/1893	1450	5 8 abso. alcohol	23			. .	Fatty heart, kidneys and liver.
7	A	12/25/1893	1810	0 20 whisky. . .	38			. .	Fatty heart, kidneys and liver.
8	A	12/26/1893	2510	10-20 whisky. . .	18			.	Fatty
9	A	12/29/ 893	1780	10 20 whisky.	20			ion	Fatty
10	A	12/30/1893	1920	5-8 abso. alcohol	16			. .	Cirrhc
11	A	2/16/1894	1830	3 abso alcohol	6			. .	Fatty
12	Y	2/16/1894	850	5 abso. alcohol				. .	Fatty
13	Y	3/20/1894	875	5-8 abso. alcoho	3			ion	Fatty heart (extreme), kidneys and liver.
14	Y	3/20/1894	910	5-8 abso. alcohol	2			ion	Fatty heart, echinococcus cysts of entire lobe of liver.
15	A	4/12/1894	1695	5-8 abso. alcohol	2			. .	Fatty degeneration of heart and liver.
16	A	4/12/1894	2520	5-8 abso. alcohol	78			. .	Fatty liver, but heart not fatty.
17	Y	4/12/1894	875	5-8 abso. alcohol	1			ion	Fatty heart (extreme).
18	Y	4/12/1894	910	5 8 abso. alcohol	1			.	No lesions.
19	Y	4/25/1894	960	5-8 abso. alcohol				. .	Fatty heart, kidneys and liver.
20	Y	5/3/1894	895	5-8 abso. alcohol				. .	No lesions.
21	Y	5/3/1894	830	5-8 abso. alcohol	1			. .	No lesions.
22	Y	5/3/1894	910	5-8 abso. alcohol				. .	No lesions.
23	Y	5 21/1894	914	5-8 abso. alcohol	1			. .	Fatty heart, kidneys and liver.
24	Y	5/21/1894	980	5-8 abso. alcohol	1			. .	Fatty heart, kidneys and liver.
25	Y							tion	Fatty heart, kidneys and liver.
26	A							. .	Fatty heart, kidneys and liver; ulcer of stomach.
27	Y							.	Fatty heart, kidneys and liver.
28	Y							tion	Fatty heart, kidneys and liver.
29	Y								ys and liver.
30	A								of heart, kidneys and liver.
31	A								
32	A							. .	; ulcer of sto'ach.
33	A								eart normal.
34	Y							. .	
35	Y							. .	
36	Y							. .	
37	A								of heart, kidneys and liver.
38	A								of heart, kidneys and liver.
39	A				1 abso alcohol				ys and liver.
40	A				) abso. alcohol				heart, kidneys and liver.
41	A				abso. alcohol				heart, cicatrix of ulcer of stomach.
42	A				abso. alcohol				heart.
43	A				) abso. alcohol				t not fatty; cicatrix of ulcer of stomach.
44	A				abso. alcohol				heart, liver and kidneys.
45	Y				) whisky . .				heart, liver and kidneys.
46	A				) whisky . .				heart, liver and kidneys.
47	Y				3 abso. alcohol				heart, liver and kidneys.
48	Y				2 abso. alcohol				heart, liver and kidneys.
49	A				abso. alcohol				slightly cirrhotic; kidneys fatty; heart normal.
50	A				3 abso. alcohol				of ulcer of sto'ch.
51	A				3 whisky . . .				
52	Y				2 whisky				heart.
53	A				0 abso alcohol				ions found.
54	A				9 abso. alcohol				heart and kidneys.
55	A				2 abso. alcohol				sions.
56	Y				5 whisky				heart, liver and kidneys.
57	Y				5 abso. alcohol				heart and kidneys.
58	Y			hol	5 abso. alcohol				sions.
59	A			hol	4974 abso. alcohol				heart, kidneys and liver.
60	A			. .	8241 whisky . . .	9/14/1896	[illegible]	Convulsions.	No lesions.
61	A			. .	18154 whisky . . .	1/14/1898	1891	Killed.	No lesions.
62	Y			hol	824		92		Fatty heart, kidney and liver.
63	A			hol	2127				Fatty heart, kidney and liver.
64	A			hol	2254				No lesions found.
65	Y			hol	10				No lesions found.
66	Y			hol	710				Fatty heart liver and kidneys.
67	Y			hol	782				Fatty heart, liver and kidneys.
68	A			hol	6875				Fatty heart, liver and kidneys.
69	A			hol	3420				No lesions.
70	A			hol	4810				Fatty heart and kidneys.
71	A			. .	2248				No lesions.
72	Y			. .	1241				Fatty heart; cicatrix of ulcer of stomach.
73	A				168 4				Fatty heart and kidneys.
74	A			hol	52				Fatty heart and kidneys.
75	Y			hol	10				No lesions.
76	Y			hol	572				No lesions.
77	A			hol	5027				No lesions.
78	A			hol	678				No lesions.
79	A			. .	6 40 whisk				heart, kidneys and liver.
80	A				1 25 whisk				sions.
81	A			hol	897 abso				sions.
82	A			hol	4328 abso.				heart, liver and kidneys.
83	A			hol	2557 abso.				sions.
84	A			hol	1285 abso.				sions.
85	A			hol	1924 abso.				heart. kidneys and liver.
86	A			hol	3688 abso.				heart and kidneys.
87	Y			. .	10 whisk				sions.
88	A			. .	1224 whisk				heart.
89	A				8420 whisk				heart, kidneys and liver.
90	A			hol	5572 abso.				sions.
91	Y			hol	5 abso.				sions.
92	Y			hol	1854 abso alcohol				Fatty heart, kidneys and liver.
93	A			hol	5 55 abso. alcohol			ion	Fatty heart, kidneys and liver.
94	A			hol	5 82 abso. alcohol			. .	Fatty heart and kidneys.
95	A			hol	68 7 abso. alcohol				No lesions.
96	A			. .	840 whisky . .			ion	Fatty heart, kidneys and liver.
97	A	12/30/1894	18 6	10-20 whisky. .	9810 whisky			. .	Fatty heart, kidneys and liver.
98	A	1/3/1895	1957	5-8 abso. alcohol	7086 abso. alcohol			. .	Fatty and cirrhotic liver; fatty kidneys.
99	A			alcohol	2983 abso. alcohol			. .	Fatty heart, liver and kidneys.
100	Y			hol	3818 abso. alcohol			.	No lesions.
101	A			hol	4335 abso. alcohol			. .	Fatty heart, kidneys and liver.
102	A			. .	8537 whisky . .			. .	No lesions.
103	A	1/10/1895	2047	10-20 whisky. . .	12840 whisky . . .			.	Fatty heart, kidneys and liver.
104	A	1/10/1895	1922	1 -20 whisky. . .	15590 whisky . . .			.	Heart not fatty, cirrhotic liver (slightly).

SYNOPSIS OF RABBIT EXPERIMENTS—CONTINUED.

No.	A—Adult. Y—Young.	Date of Beginning of Experiments.	Wt. at Beginning in Grams.	Quantity of Alcohol Fed Per Diem in C.C.	Total Quantity of Alcohol Consumed in C.C.	Date of Death.	Wt. at Death in Grams.	Clinical Cause of Death.	Principal Lesions Formed at Death.
105	A			ohol	4154 at				Fatty heart, liver and kidneys.
106	Y			. .	225 w			tion	Fatty heart, liver and kidneys.
107	Y			. .	2086 w			tion	Fatty heart, liver and kidneys.
108	A			ohol	6740 al			. .	No lesions.
109	A			ohol	4082 at			. .	No lesions
110	A			ohol	3752 al			. .	Fatty heart, liver and kidneys
111	A	[illegible]	[illegible]	ohol	3016 at			. .	Fatty
112	A				14925 at			. .	Fat y
113	A			ohol	5517 at			. .	Heart not fatty; kidneys fatty.
114	A			ohol	2029 at			. .	No lesion.
115	A			ohol	2873 at			. .	Fatty heart, liver and kidneys.
116	A			ohol	5124 at			.	Heart not fatty.
117	A			ohol	3848 at				No lesions.
118	A			ohol	2365 at			tion	Fatty heart, liver and kidneys.
119	A			ohol	4752 abso. alcohol	[illegible]	[illegible]	Killed.	Heart not fatty; kidneys fatty.
120	A			ohol	5 abso. alcohol	7/4/1895	1852	Acute intoxication. . . .	No lesions.

conditions must be present in addition to the action of the alcohol. This failure to produce cirrhosis of the liver experimentally by the use of alcohol can not be attributed in our series to the too short duration of the experiments.

Lungs.—The lungs showed nothing important; frequently in the act of dying edema set in.

Kidneys.—The kidneys showed, as a rule, fine fatty degeneration of the epithelium in the tubules of the boundary zone of the pyramids; also a small amount of deposit in the cortical tubules. Here and there the arteries of the kidneys stood out prominently and on section were found thickened in the tunica adventitia; in a few cases the changes in the glomeruli were marked, a considerable number of these having undergone atrophy. In the five instances in which albumin and casts were found in the urine, these changes in the kidneys were marked. A number of the rabbits showed no changes in the kidneys whatever; an actual chronic interstitial nephritis was never produced.

Stomach and Intestines.—The examination of the stomach showed a round ulcer in two animals and cicatrices of healed ulcers in four. The ulcers were sharply defined, 2 cm. and 3 cm. in diameter, with thickened edges and base—the base being defined by the muscularis. Most frequently the mucus membrane was congested and there was an increase in mucus.

In many instances, the cells of the gastric tubules were cloudy and infiltrated with fatty granules, the interglandular tissue was infiltrated with small round cells and an increase in connective tissue was occasionally observed. There was evidence that some of these alterations, especially the more profound ones, were attributable sometimes to mechanical injuries inflicted by the stomach tube. In many other instances the stomach was perfectly normal. As a rule no pathologic changes were present in the intestine.

Generative Organs.—The testicles frequently showed a diffuse fine deposition of fatty granules scattered in the epithelium of the tubes and interstitial cells. The uterus revealed nothing abnormal except in those cases in which there had been abortions and in which the rabbit had died of septicemia. The uterus, in these instances, was enlarged, and the mucus membrane much infiltrated with leucocytes; the blood vessels were engorged throughout; in every instance the organism of rabbit septicemia was recovered.

Nervous System.—The cortex of the brains of a number of the rabbits was studied by Berkley.[1] The following is taken from his work, "Pathologic Histology of the Rabbit's Cortex in Chronic Alcoholism as Seen with Nissl's Stain," and "Pathologic Histology of the Rabbit's Cortex in Chronic Alcoholism as Seen with the Silver Phospho-Molybdate Stain:"

The smallest arteries have an altogether different appearance from the control preparations. The walls of many of them are irregularly shrunken, at intervals almost botryoidal in appearance; and the nuclei of the vascular walls, while not increased in numbers, are swollen, and project considerably into the lumen of the canal. The perivascular space is larger than in the control preparations, and the hyaline membrane separating it from the cerebral substance is a little more definite than normal. On transverse section the walls of the vessel are a little thickened, the lumen narrowed, the change affecting the intima more than the media. Very few of the arteries show any very pronounced changes. Four or five miliary hemorrhages into the sheaths of small vessels were noted in the several sections, all near the pial margin. Altogether no very definite lesions could be determined in the blood-vessels. Alterations of the nuclei chiefly in the disposition, swelling, and irregularity of contour of the nucleolar chromophilic particles are found.

After all possible allowances have been made for artefacts and for physiologic variations from the normal, as well as for inequalities in the staining process, there remain a large number of cells in our alcoholic brains that are distinctly abnormal. The principal lesions in them, are a distinct diminution in size, a shrinkage of a vast majority of all the cortical cells, particularly in the outspread of the branches, certain swellings of the dendritic processes with disappearance of the gemmulæ, and roughening of the stronger processes, and to a less extent of the cell body. A careful comparison of a control preparation, and one from an alcoholic rabbit's brain, will show the following differences: The cell bodies and main processes in the normal are smoother and more even, the dendrites are broader, the gemmulæ are more even, thicker and feathery, they apparently spread out over more lateral surface, and are very regular in appearance; while in the alcoholic there is a gap here and there as if some of them had fallen off and disappeared. Indeed, the differences between the two cells may shortly be expressed in that the whole appearance of the normal cell is stouter than its pathologic fellow.

SUMMARY OF THE PATHOLOGIC CHANGES IN EXPERIMENTAL ALCOHOLISM.

Prof. Welch[2] has summarized these changes as follows:

1. Animals exhibit marked individual differences in their susceptibility to the injurious effects of the prolonged administration of intoxicating doses of alcohol. While certain individuals succumb quickly, others may be kept alive under these circumstances for at least

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[1] Johns Hopkins Hospital Reports, vol. vi, No. 1.

[2] "Physiological Aspects of the Liquor Problem."

four years without presenting any serious anatomic lesions attributable to the alcohol. Between the extremes, there are all gradations in susceptibility, young animals and pregnant ones being generally the most susceptible.

2. The experimental reproduction in animals of certain of the more characteristic diseases of human beings, attributable to the abuse of alcohol, such as cirrhosis of the liver, chronic Bright's disease and arteriosclerosis, has not been satisfactorily attained. The most common pathologic condition noted is a fatty metamorphosis affecting especially the cells of the liver, the heart muscle, and the kidneys. This lesion soon disappears after stopping the use of the alcohol. Death or necrosis of limited groups of cells in the liver and kidneys may occur, but is inconstant. More common is an acute or chronic catarrhal gastritis, but this, too, is often absent or but slight. Changes in the central nervous system, similar to those in acute alcoholism, as well as certain additional ones, may be present in experimental chronic alcoholism. Hyperemia and small hemorrhages may occur, especially in the stomach, the kidneys and the brain. In view of considerable differences in the results reported by different experimenters, and of many still unsolved problems, additional experiments on the pathologic effects of the long-continued use of alcohol and of alcoholic drinks are needed.

3. Alcoholic intoxication increases the susceptibility of animals to many infections, and influences unfavorably the process of immunization. Pregnant rabbits repeatedly intoxicated by alcohol are likely to abort, and to die soon afterward from some accidental infection. Many of their young die a few days after birth.

In conclusion, I wish especially to thank Prof. William H. Welch, who directed this work, for his many suggestions and his encouragement in the performance of these experiments.

This work was aided by a grant from the "Committee of Fifty."

PULMONARY STREPTOTHRICOSIS.

A REPORT OF TWO CASES AND A REVIEW OF THOSE HITHERTO REPORTED FROM A CLINICAL STANDPOINT.

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It is not our intention in the present paper to discuss the morphology or the classification of the streptothrix. This subject has been very ably considered in the papers of Norris and Larkin,[1] Flexner,[2] Warthin and Olney[3] and others. It may be said, however, that no definite conclusions have been reached. The consensus of opinion seems to be that there are several distinct varieties of steptothrix, and that the various cases reported as instances of streptothricosis have been due to different varieties of this micro-organism.

From a study of the thus far reported cases of pulmonary streptothricosis it seems that the majority of the cases present the clinical picture of pulmonary tuberculosis. Bronchiectasis is frequently encountered, and hemorrhage is quite a common symptom. The majority of cases ended fatally, often as the result of metastasis to different parts of the body, the central nervous system being frequently involved. We have collected only those cases of streptothricosis which showed evidences of pulmonary involvement; numerous cases are on record in which other organs were the seat of the morbid process. Thus, for example, Ucke has reported a case of tonsillitis due to the streptococcus. Of course, it is not proved that this micro-organism was primarily etiologic in all the cases here collected, although in the majority it would seem eminently probable.

The streptothrix belongs to a rather ill-defined class of vegetable micro-organisms which, while in many respects closely simulating bacteria, yet possess certain features resembling the hyphomycetes. The dividing line between the streptothrix and bacteria is hard to draw, inasmuch as some of the latter, such as the *B. diphtheriæ* and the *B. tuberculosis,* at times exhibit branching and other characteristics of the former. Flexner says that the streptothrices, like the moulds, develop from spores into "cylindrical, dichotomously-branching threads, which alternately grow into colonies, the appearance of which suggest a mass of radiating filaments (mycelia)." The streptothrix, then, stands in a class between the moulds and the bacteria.

Doubtless one reason why streptothricosis of the lung has not been reported more frequently is that it is not readily demonstrable by the carbol-fuchsin method of staining, and, therefore, unless the sputum is examined by the Weigert-Gram method the organism may be overlooked. In a number of the cases which we have collected, the sputum was examined repeatedly for tubercle bacilli by the usual carbol-fuchsin method, with negative results, and it was only when the Gram process was employed that the micro-organism was found. The obvious conclusion is, of course, that all cases of suspected tuberculosis in which the tubercle bacillus is not found should be carefully examined by the Gram process *for streptothrix.*

The mere presence of the streptothrix in the sputum or in the tissues does, of course, not prove it to have been the primary pathogenic factor; it may be there simply as a secondary infection; that there are cases on record, however, in which this organism played the main and probably sole rôle in the production of organic lesions, we think, has been incontestably shown. It is a well-known fact that the tubercle bacillus tends to produce different pathologic changes, which present different clinical pictures when it is associated with varying micro-organisms, and it is quite probable that similar variations occur in streptothricosis when mixed infections exist. From a study of the reported cases, it seems that in the acute, bronchopneumonic type of streptothricosis, metastasis is quite common. The skin and the brain seem to be the most frequent locations for such processes, but the bones, the peritoneum, the pericardium, the liver, the spleen, the kidney and the bladder at times have also shared in the involvement. Animal inoculations were made in several cases, and in quite a number typical, although not always fatal, lesions were produced. The tendency to metastasis was also well marked in most of the inoculated animals.

Mayer,[4] in his *"Briefe aus Ostasien,"* mentions having seen ten cases of streptothricosis of the respiratory tract.

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[1] Norris and Larkin: Jour. of Exp. Med., 1890.

[2] Flexner: Trans. Assoc. Amer. Phys., 1898, vol. xiii.

[3] Warthin and Olney: Amer. Jour. of Med. Sciences, October, 1904.

[4] Mayer: Muenchner med. Wochft., 1901, [illegible] 1775 [illegible]

The organism was found in the sputum in small yellowish lumps resembling actinomycosis granules; elastic tissue blood and alveolar cells were also present. One case which came to autopsy showed encapsulated gangrenous areas in the right upper lobe of the lung, in which, as also in the pleural cavity, streptothrix could be demonstrated. These cases, occurring, as they did, after a sandstorm, suggested that infection occurred by inhalation. Another case is also mentioned in which apparently well-marked cavity formation healed completely, together with a disappearance of all symptoms.

Streptothricosis of the lung occurs in two forms: 1. The acute variety, which presents the symptoms of bronchopneumonia, with mucopurulent expectoration, yellowish or greenish in color, at times hemorrhagic or containing elastic tissue and bespeaking a necrotic process. Later in the course of the disease we may encounter purulent metastases in other parts of the body. Such have been reported in the skin by Scheele and Petruschky,[5] and in the liver, spleen, heart and brain by Engelhardt and Löhlein.[6] This form, therefore, presents in the advanced stages the clinical picture of a pyemia and seems to run to an inevitably fatal termination.

The gross pathology of the lungs resembles, to a certain extent, that of tuberculosis, with caseous areas and softening, surrounded by zones of round-cell infiltration or induration; occasionally multiple abscesses are encountered.

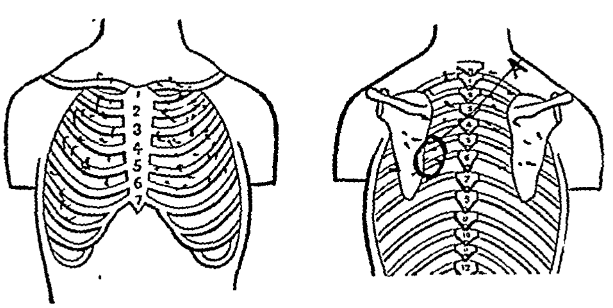

Fig. 1—Showing râles throughout chest. A. Amphoric whispered pectoral râles.

Microscopically, the streptothrix appears as long, fine, homogeneous, glistening threads, occurring in clumps and exhibiting a true branching, staining poorly and especially irregularly with Gram's stain, and thus, too, on superficial examination, resembling cocci (Fraenkel).[7]

2. The chronic variety, first described by Flexner[2] in 1897, presents almost an identical picture with chronic pulmonary tuberculosis. The case here reported showed in the lungs extensive areas of consolidation and necrosis, together with numerous tubercle-like bodies, the latter being also found in the peritoneal cavity.

CASE 1.—W. S., mulatto, aged 22, was admitted to the Philadelphia General Hospital Sept. 7, 1904, on account of inguinal buboes of several weeks' duration, which were the sequelæ of gonorrhea. After undergoing the operations of circumcision and extirpation of the inguinal glands, the patient having a cough and signs of pulmonary apical disease, was transferred to the medical wards.

History.—Father died of unknown cause, mother of pulmonary tuberculosis. There is no history of malignancy or of syphilis. Patient had convulsions in childhood; later measles and diphtheria. He had chancroid of the penis fourteen months ago. He uses alcohol in moderation, but does not use tobacco.

Present Illness.—On admission to the medical wards, the patient complained of persistent cough, with copious fetid expectoration, and of pain in the left side and back.

Examination.—Pulse 90, respirations 35, temperature 102 F. Dyspnea was marked.

Lungs: There was marked dullness of the left chest, extending from the base up to the seventh rib. There was impairment of resonance at the left apex, anteriorly, at which area a few subcrepitant râles were heard. Posteriorly there was dullness at the left apex, with bronchovesicular expiration and great numbers of mixed râles. Over both bases, anteriorly, laterally and posteriorly, resonance and fremitus were diminished, breath sounds were feeble and distant. Posteriorly, beneath the lower third of the left scapula, there was an area of about two and one-half inches in diameter, over which amphoric respiration, ægophony, whispered pectoriloquy and moist resonating râles were heard. The entire left chest was tender on percussion, and respiratory motion was restricted.

Heart: There was marked accentuation of the second sounds at the bases; otherwise examination was negative. Other organs showed nothing abnormal.

Urine: Urine was amber colored, acid, sp. gr., 1024. There was a trace of albumin, no glucose; there were hyaline casts and epithelial débris. It was deficient in amount.

Blood: On several different occasions, this showed a leucocytosis ranging from 9,000 to 13,600, chiefly of the polymorphonuclear variety.

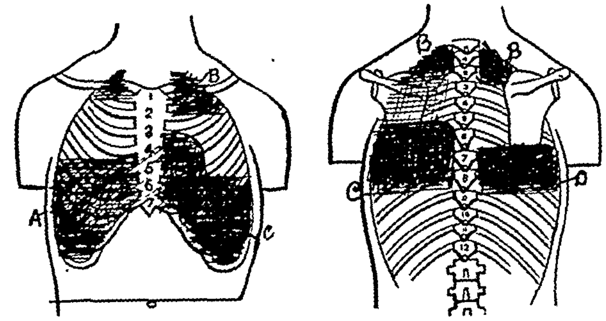

Fig. 2. Impaired resonance, vocal fremitus, and bronchovesicular expiration; C, distant breath sounds, fremitus and resonance feeble, pain, flat to percussion; D, friction sounds.

Course of the Disease.—The patient continued to lose weight and suffered from night sweats, accompanied by cough and large amounts of mucopurulent expectoration. He had several profuse pulmonary hemorrhages, and presented the clinical picture of chronic pulmonary tuberculosis.

Sputum: The sputum was examined for tubercle bacilli on sixteen different occasions, with negative results.

On January 14, Dr. Rosenberger reported the presence of streptothrix in the sputum.

March 7, the following report was received: "A great variety of bacteria. Organisms corresponding in morphology and tinctorial characters to the *B. fusiformis* of Vincent; cocci resembling pneumococci, a few streptococci, and various other unidentified species. No tubercle bacilli are demonstrable. A streptothrix is also present."

March 26, a special examination for Pfeiffer's bacillus proved negative.

March 29, the following physical signs were recorded: Clubbing of the fingers which has existed since admission has increased in degree.

Diagnosis.—Until the streptothrix was demonstrated in the sputum the diagnosis had been: "Chronic bilateral fibroid pleuritis, with infiltration and bronchiectasis (or cavity formation) of the left lung, probably tuberculous in origin."

Treatment.—This consisted mainly of stimulation with strychnin and forced feeding. Pain in the left chest was greatly relieved by strapping. Hemoptysis was treated by recumbency, ice bag to the chest, glonoin internally, etc. Santal oil was administered for a time in the hope of lessening expectoration and decreasing its fetid character, without any apparent result. Creosote in ascending doses was tried at another time and proved hardly more efficacious.

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[5] Scheele and Petruschky: Deut. med. Wochft., 1897.

[6] Engelhardt and Löhlein: Deut. Arch. f. klin. Med., vol. lxxv, p. 118.

[7] Fraenkel: Pathologie und Therapie der Lungenkrankheiten, 1904.

Diet: During the greater part of the time the patient was given the regular "house diet." In February eggnogs were given between meals, and the patient was encouraged to take as much milk as possible. Soon after beginning improvement was noted, manifesting itself by gain of weight and strength. As soon as the patient was able to be out of bed he was made to spend the greater part of the day out of doors on the fire escape.

April 3, patient left hospital at his own request, against advice. His temperature, pulse and respiration were still irregular and abnormally high. The nephritis, according to chemical tests, had disappeared, but the patient had never voided more than 48 ounces of urine, the average being about 35 ounces. He had gained considerably in weight and said that he felt strong enough to "work on the farm."

Case 2.—P. T., Italian, aged 26, a laborer, was admitted to the Philadelphia General Hospital March 23, 1905, with the symptoms of left-sided pleuritis.

No.	Reported By	Age.	Sex.	Symptoms.	Occupation.	Course of Disease.	Result.	Cultures.	Inoculation.	Associated micro-organisms.	Organs Involved.	Coincident Tuberculosis.	Sputum.	Remarks.
1	Flexner[2]. . . .	70	M	Pulmonary tuberculosis.	Not stated.	. . . . .	Death....	—	—	None.... .	Lungs, peritoneum, omentum, liver, spleen.	None	None	
2	Eppinger[8]. . .	52	M	Cerebrospinal meningitis.	Glass cutter.	20 days..	Death ...	+	+	None.... .	Br in, l'ngs, bronchial glands, spinal cord.	Old focus lungs	Not stated . .	
3	Sabrazes & Riviere[9]. . .	..	..	Abscess of neck, renal infarct.	Not stated.	. . . .	Death....	+	+	None... .	Lungs, brain, kidney.	None	Not stated . .	
4	Sabrazes & Riviere . . .	..	..	Bronchopneumonia, multiple cutaneous abcesses.	Not stated.	. . . . .	Death....	+	+	None.... .	Lungs, skin.. . .	None	Mucopurulent.	
5	Scheele & Petruschky[5] .. .	56	F	Pleuropneumonia, pyemia.	House work.	5 mos....	Death....	—	—	None.... .	Lungs, skin, kidney, bladder.	None	Mucopurulent.	First case diagnosticated intra vitam.
6	Buckholtz[11]. .	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]th....	—	—	Str'cocci secondary.	Lungs, pleuræ..	None	Fetid mucopurulent.	Hemoptysis; cavity formation.
7	Petruschky[5]..	[illegible]	[illegible]	[illegible] culosis.	[illegible]	[illegible] weeks.	[illegible] stated.	—	—	Infl'enza B. diplo'cci.	Lungs..	None	Mucopurulent.	Mother and sister died of tuber'losis, *streptothricosis?*
8	Rullmann[12] . .	..	F	Tub'cul'is bronchial glands.	House work.	. . . . .	Not stated.	+	+	Diphtheria?	Lungs.. . . .	None	Aqueous and cheesy nodules.	
9	Foulerton[13].. .	46	F	Chronic pulmonary tuberculosis.	House work.	2 years...	Not stated.	—	—	None.... .	Lungs..	None	Aqueous, at times hemorrhagic and "sulphur granules."	
10	Norris & Larkin [1].	45	M	Fever, cough, dyspnea.	Carpenter.	7 weeks..	Death....	+	+	Streptococci.	Lungs, bronchial glands, pleuræ.	None	Copious, fetid mucopurulent.	Clinical diag. pulmonary gangrene, bronchiectasis.
11	Norris & Larkin [1].	23	M	Chronic pulmonary tuberculosis.	Laborer.	13 years?.	Death....	+	+	Streptococci.	Lungs, bronchial glands, pleuræ.	Yes.	Mucopurulent.	Scoliosis and 10 yrs. cough; diagnosis bronchiectasis.
12	Aoyama & Migamoto[14]..	..	..	Cough, expectoration.	Not stated.	7 days...	Death....	+	+	None . . .	Lungs, brain?. .	None	Copious, nonfetid homogeneous, yellowish.	
13	Musser[15] . . .	37	M	Chronic pulmonary tuberculosis.	Business man.	1 week...	Death....	—	—	Strepto- and pneu-[illegible]	Lungs.			
14	Birt & Leishman[16].	26	M	Empyema, pericarditis.	Soldier.	5 mos	Death....	+	+	[illegible] dium.	[illegible] uræ, [illegible] um,	None	Reddish, mucopurulent.	
15	Warthin & Olney[3]. . . .	45	M	Pulmonary tuberculosis.	Farmer.	3 years...	Death....	0	0	None.... .	Lungs.	?	Mucopurulent, no fetor.	
16	Engalhard & Loehlein[6].. . .	22	M	Dyspnea, cough, fever, pleuritis.	. . . .	3 mos....	Death....	+	+	None.... .	Lungs, heart, pleuræ, peritoneum, liv r, spleen, brain.	None	Mucopurulent.	
17	Von Hoke[17]. .	48	M	Chronic tuberculosis.	Laborer.	2 years...	Death....	*	*	Streptococci.	Lungs, pleuræ..	None	Mucopurulent.	Hemoptysis, clubbed fingers.
18	Ucke[18]	..	..	Pulmonary abcess, empyema.	. . . . .	. . . . . .	Improved.	—	—	None.... .	Lungs, pleuræ..	None	Mucopurulent.	
19	Ucke...	..	.	Pulmonary gangrene..	. . . . .	. . . . . .	Death....	—	—	Cocci. . . .	Carcinoma, esophagus; rupture, bronchus	None	Fetid, mucopurulent.	
20	V. Giemssen[19].	Yn'g	F	Cough, expectoration.	House work.	Several years.	Stationary.	0	0	None.... .	Lungs.	None	Mucopurulent.	Hemoptysis round masses in sputum like actinomycosis granules.
21	Ashton & Norris	22	M	Fibroid pleuritis, bronchiectasis.	Laborer.	3 mos....	Improved.	0	0	Very numerous.	Lungs, pleuræ.	None	Mucopurulent.	Hemoptysis; clubbed fingers, mother died of pulmonary tuberculosis.
22	Ashton & Norris.	26	..	Pulmonary tuberculosis.	Laborer.	6 mos....	Stationary.	0	0	None.... .	Lungs, pleuræ..	None	Mucopurulent.	Hemoptysis; clubbed fingers.
23	Riviere[20].... .	..	..	Pulmonary tuberculosis.	. . . . .	Not stated.	Death?...	+	+	None.... .	Lungs, skin. .	None	Mucopurulent.	
24	Aoyama[14].. . .	..	M	Pulmonary tuberculosis (kakke).	. . . . .	. . . . .	Death?...	+	+	Tubercle	Lungs, pleuræ..	Yes. .	Mucopurulent.	
25	Chiari[21]	43	..	Cerebral hemorrhage.	Brickmaker.	7 days...	Death?...	—	—	Pneumococci.	Lungs, pleuræ cerebellum, cord.	Old sc'rs?	Mucopurulent.	Bronchiectasis.
26	Ohlmacher[22]...	..	..	Pulmonary tuberculosis.										

Note.—In cultures and inoculation columns + signifies positive; — signifies negative.

History.—Parents are dead from unknown causes. Four brothers and one sister are well. There is no history of tuberculosis or of malignant disease in the family. Patient denies

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8. Eppinger: Zieglers Beitraege, 1890, vol. IX.
9. Sabrazes and Riviere: La Semaine Médicale, 1895.
11. Buchholtz: Zeit. f. Hygiene u. Infectionskrankheit, 1897, vol. xxiv.
12. Rullmann: Munch. med. Wochft., 1898 and 1902.
13. Foulerton: Lancet, 1899.
14. Aoyama and Miyamoto: Centribl. f. Bakteriol., 1901.
15. Musser: Chicago Med. Rec., 1901.
16. Birt and Leishman: Jour. of Hygiene, 1902.
17. von Hoke: Prager med. Wochft., 1901.
18. Ucke: St. Petersburger med. Wochft., 1901.
19. von Ziemssen: Verhandl. d. Cong. f. innere Med., 1898.
20. Riviere: Archiv. Clin. de Bordeaux, 1895, vol. iv, p. 469.
21. Chiari: Zeits. f. Heilkunde, vol. xxi, 1900, No. 10.
22. Ohlmacher: Quoted by Warthin and Olney.

all history of preceding diseases, even in childhood; also of venereal disease and alcoholism.

Present Illness.—This began one month ago with cough, which increased as time went on and was accompanied with mucopurulent expectoration. During this time he lost weight rapidly, developed night sweats and anorexia, and had on two or three occasions attacks of hemoptysis.

Examination.—The patient is a well-developed man, fairly nourished. Pupils are normal. Moebius' sign was present in right eye. Chest is well formed. There is marked clubbing of the fingers.

Heart: There was marked accentuation of the aortic second sound; otherwise negative.

Spleen: This organ was palpable two inches below the costal margin.

Reflexes: The reflexes were apparently normal.

Lungs: There was diminished, delayed and restricted respiratory movement on the left side. Breathing was painful. The lower two-thirds of the left chest was flat on percussion, breath sounds feeble and distant, fremitus absent and resonance diminished. At the left apex, anteriorly, there was bronchovesicular expiration, fremitus and resonance were increased, and there was cog-wheel inspiration. Posteriorly, there were the same findings, with the exception of the last-named. At the right apex, anteriorly and posteriorly, there was vesiculobronchial expiration. Moist râles were heard from time to time diffusely throughout both lungs, mostly in the left.

Urine: Amber, acid, trace of glucose, no albumin, triple phosphates and amorphous urates.

March 26, 1905, pain in left side, incessant cough and copious, thin, mucopurulent expectoration remain the chief symptoms. There were irregular fever, night sweats (Figs. 1 and 2). The foregoing examination led us to believe that we had to deal with a case of pulmonary tuberculosis, with extensive involvement of the pleura. The sputum was examined for tubercle bacilli five times, with negative results. Finally a special examination by Dr. Rosenberger revealed the presence of streptothrix.

May 9, 1905, patient was more dyspneic and emaciated. Clubbing of fingers was more marked. Two urine examinations were entirely negative. Pain in the chest was relieved by strapping. Expectoration was thin, mucopurulent, sometimes almost aqueous in character and not infrequently amounted to over a quart in the course of twenty-four hours, thus pointing strongly toward the existence of a bronchiectasis. No definite physical signs pointing toward the existence or localization of such a lesion, however, could be made out, but the pleural thickening obscured the breath sounds almost entirely. Exploratory puncture of the left pleural sac yielded negative results. Despite the absence of chemical and microscopic findings in the urine indicative of nephritis, the patient persistently voided very small quantities of urine. This possibly was, in part, due to the large quantity of fluid eliminated in the sputum.

May 29, 1905, patient was in the same condition. He looked very ill, almost cachectic. He took nourishment badly and did not seem much benefited by extra diet of milk and eggs with which he was supplied. It was thought that he would, perhaps, do better if outdoor life could be instituted. To check the excessive expectoration, ascending doses of creosote were administered, without benefit, but the dosage amounted to only fifteen minims thrice daily. Further than this, treatment was stimulating—strychnin, glonoin, digitalis, caffein, etc. Temperature was still irregular.

Blood:

Erythrocytes, 3.560.000; leucocytes, 7,400. Differential count of leucocytes, as follows:

Lymphocytes	13.5 per cent.
Polymorphonuclear	77 per cent.
Hyaline forms	7 per cent.
Eosinophiles	2.5 per cent.

SUMMARY OF CASES.

The accompanying tabulation of twenty-six cases of pulmonary streptothricosis includes the hitherto reported cases, together with the two here recorded. The cases have been compared and contrasted from a clinical standpoint, the preceding articles having dealt almost exclusively with the pathologic and bacteriologic side of the question. From the study of these the following facts may be summarized:

Thirteen cases occurred in males, 5 in females, 8 no data. The youngest individual attacked was 12 years, the oldest 70. The course of the disease varied from one week to several years; the majority showed a duration of several months. Seventeen cases had the symptoms of pulmonary tuberculosis, most of these of the chronic variety. Twenty of the cases died—76 per cent.—2 improved, 2 remained stationary, 2 no data. Cultures and animal inoculations yielded positive results in 11 instances. Hemoptysis was recorded 6 times (23 per cent.) Pure streptothrix infection existed in 14, in 12 other organisms were coincidently encountered. Tuberculous lesions—old pulmonary scars—were found twice, tubercle bacilli once, scoliosis once. Various methods of treatment have been tried without definite or satisfactory results. The inhalation of medicated vapors had no effect. It would seem rational to presume that the best results would be attained by a therapy such as is employed in the various sanatoria for tuberculosis.

It will be noted that the two cases here reported present numerous features in common. Both suffered from inflammation of the pleuræ, accompanied by evidences of marked infiltration. Both expectorated very large amounts of mucopurulent matter and had irregular fever, hemoptysis and symptoms of vasomotor ataxia. Both continuously voided very small quantities of urine—often only from 14 to 16 ounces a day—without marked evidences of nephritis, despite the fact that they were imbibing large amounts of liquid diet. In their response to treatment, however, there was a marked difference in the two cases. The patient in Case 1, in whom the condition had apparently existed for a longer time, improved under treatment and left the hospital. The patient in Case 2, in whom the infection seemed more acute and virulent, became progressively worse. Despite the assertions of the patients to the contrary, we are inclined to believe that the disease had existed in both cases for a much longer period than the histories would lead us to believe; for it is hardly credible that such extensive and massive pleural thickening, even without the bronchiectasis, could take place in a short time. It is more than likely that, similarly to many cases of pulmonary tuberculosis, the incipient symptoms were of such slight and insidious nature that they were overlooked by the patient.

In closing we would like especially to emphasize our conviction that some of the many apparent cases of pulmonary tuberculosis, in which there is seemingly extensive tissue involvement, often associated with copious expectoration, in which repeated analyses of the sputum fail to reveal tubercle bacilli, if examined with the proper tinctorial agents, would reveal the presence of the streptothrix.

Improved Technic of Spinal Anesthesia.—Le Filliatre states that all the by-effects of spinal cocainization can be avoided by reducing the pressure of the cerebrospinal fluid as a preliminary. Whatever the pressure, he allows the fluid to flow until, instead of *spurting*, it drips slowly from the needle. He then reinjects always the same amount—10 c.c—mixed with the anesthetic to be employed. In an illustrated communication in the *Journal de Médecine de Paris*, he announces that he has never had a mishap in a total of 452 cases in which he has followed this technic. He thinks the varying experiences of others are due to the differences in the pressure of the cerebrospinal fluid at the moment of the injection.

Special Article

IMMUNITY.

CHAPTER XXV.

CHOLERA.

In 1883 Koch recognized microscopically in the stools of cholera patients, and by proper technic obtained in pure culture, the *Vibrio choleræ*, which stands to-day as the unquestioned cause of Asiatic cholera. The organism may be cultivated from the stools in every case of cholera, and is never found in the stools of normal individuals, except in the case of non-susceptible persons who are often encountered in the presence of an epidemic. Such persons are often a source of danger as unsuspected "cholera carriers." No other intestinal disease is accompanied by the presence of the vibrio of cholera.

Characteristics of the Organism.

Typically the cholera vibrio is about 1.5 microns long and one-fourth as broad. When freshly cultivated from the stools the cells of young cultures have the so-called comma shape which has given the organism the name of the comma bacillus. The form in reality is that of a segment of a spiral. When two cells are attached end to end an S-shape is commonly produced, and long spirals are made up of many cells which are joined at the ends. Old cultures show many deviations from the typical form, the cells assuming the form of thick rods or even appearing coccus-like. The vibrio possesses a single long flagella, which is situated at an end. Although two, four and six flagellæ have been described, Kolle states that such organisms are not cholera vibrios, but vibrios of another nature. In the character and rapidity of their movement, as seen in a hanging-drop, Koch compares the organisms to a swarm of mosquitoes. Old cultures may lose their motility to a large extent. The cholera vibrio does not form spores, although certain involution forms simulate them. It stains readily with the ordinary anilin dyes and is Gram negative.

Cultivation from the Stools.

The comma bacillus grows readily in various culture media of an alkaline reaction, certain appearances being characteristic; it is an obligate aërobe under artificial conditions, in spite of the fact that it flourishes in the intestines. The optimum temperature lies between 30 and 40 C. A very simple method of obtaining the organism in pure culture from the stools was discovered by Koch. In tubes of peptone bouillon which have been inoculated with the feces of a patient, the vibrio proliferates rapidly and within a few hours exists in almost pure culture at the surface of the liquid. Isolated colonies are obtained by transferring a small amount of the surface fluid to tubes of liquefied gelatin, then plating the latter. The colonies of cholera vibrio appear in a few hours as small translucent points from which pure cultures are made on a suitable medium.

Identification.

For more positive identification of the organism agglutination tests are performed with an artificially prepared anticholera serum. The Royal Institute for Infectious Diseases (Berlin) keeps on hand a dried serum of known strength (1-10,000) for this purpose. Tests are made in dilutions of 1/50, 1/100, 1/1000 and 1/2000, the final dilutions being so great that coagglutinins for other vibrios are practically eliminated. To the agglutination test may be added the "Pfeiffer experiment," in which the protective power of an anticholera serum is determined when guinea-pigs are infected intraperitoneally with the suspected culture. If the serum shows a protective power against this organism which approximates that shown against a known cholera vibrio, the diagnosis of cholera is justified. In performing such experiments the serum is mixed with the culture before injection.

Resistance.

The resistance of the cholera vibrio is very low. It dies in about two hours when dried (Koch) and on this account dust infection is thought not to occur. It is killed instantaneously by the boiling temperature, and in five minutes at 80 C. It is extremely susceptible to carbolic acid (killed by 1 per cent. in five minutes), corrosive sublimate (1 to 2,000,000 or 3,000,000 in from five to ten minutes), and to acids. Calcium chlorid is an efficient disinfectant when thoroughly mixed with the stools. The micro-organism lives in distilled water not longer than twenty-four hours, in ordinary water for several days to several weeks, and in one instance it was cultivated from the water of an aquarium after several months. Its life is short in the presence of putrefactive bacteria and rapidly-growing saprophytes, dying in sewer water in from twenty-four to thirty hours (Koch). Because of the large overgrowth of other organisms, the vibrio can rarely be cultivated from the stools of cholera patients for a longer period than from one to three days after death. Its life in and on foods depends on the reaction (alkalinity is favorable), and on the presence or absence of moisture. It lives longer in sterilized milk (ten days) than in that which contains other micro-organisms.

Infection Atrium and Dissemination.

The only infection atrium is the small intestine by way of the mouth and stomach. Infection by way of the lungs or through wounds does not take place. In the patient the living vibrio occurs only in the intestines, and it is excreted only with the feces. So far as known, it has no normal habitat outside the body, although a stream or other water supply may contain the vibrio over a long period through constant reinfection of the water. This can only occur, directly or indirectly, through the stools of patients. The washing of soiled linen or bathing in water which is used for drinking and other household purposes have caused outbreaks of cholera. The water supply of a city may be infected by the discharges of patients who are confined to a ship. Convalescents may retain virulent organisms in their stools for forty-eight days (Kolle), and, as stated, healthy persons who are insusceptible to cholera and who have resided in a cholera infected district, may carry virulent vibrios in their intestines. These conditions have contributed to the futility which to a large degree has met attempts to restrict cholera to limited districts by ordinary quarantine measures. In its extension from country to country cholera finds its way along the lines of travel. In some instances in which cholera has existed in pandemic proportions it has been possible to trace its source to the delta of the Ganges in India, a region in which the disease is endemic. Pilgrims from India have carried the infection to Mecca, and pilgrims from Egypt have carried it to their native land on their return from Mecca. Either from Egypt, or through Arabia, Asia Minor and Southern Russia or Turkey, cholera has with more or less rapidity extended to Western Europe. The development of rapid transit has increased the rapidity with which cholera may extend to distant parts. From Europe the disease has been carried to various ports of the western continent, Canada, the West Indies and southern ports of the United States, from which extension has occurred to different sections. Out of six widespread epidemics which occurred in the past hundred years, three have involved the United States, reaching considerable proportions. The means of introduction is not always apparent.

Epidemics.

As in typhoid, two types of epidemics are known, the two often being associated: First, that caused by water infection and, second, that in which the disease spreads by other means of indirect contact and by direct contact. The explosive character of an epidemic caused by infection of a water supply is much more striking than in the case of typhoid fever. In large cities hundreds, or even thousands, may be stricken within a single day. The brief incubation period, from twelve to twenty-four hours, contributes to the acuteness of the outbreak. The distribution of a "water-borne" epidemic corresponds with the distribution of the infected water. A remarkable occurrence illustrating this point was noted in the epidemic which attacked Hamburg in 1892. In certain streets in which the residents of the two sides obtained their water supply from different sources, one of which was infected, cholera was limited to that side which was supplied with infected water. Only irregular cases due to contact infection occurred on the opposite side of the street.

Epidemics which are due solely to contact infection develop slowly and irregularly. A common incident is the successive involvement of the members of a family, whereas others in the immediate neighborhood are unaffected. Water borne epidemics are invariably complicated by the occurrence of contact infection. The methods of contact infection are not different from those mentioned under typhoid fever. Food or milk which has been infected by contaminated water or by other means may cause the development of isolated groups or cases.

Susceptibility of Animals.

So far as known, no animal undergoes spontaneous infection with cholera. By rendering the gastric contents of guinea-pigs alkaline and introducing cultures into the stomach through a tube, Koch induced a cholera-like process from which the animals died within from twenty-four to thirty-six hours; an intraperitoneal injection of opium, to quiet peristalsis, seemed to be necessary for the success of the experiment. Similar results were obtained in very young rabbits by feeding cultures to them (Issaeff and Kolle, Metchnikoff). Guinea-pigs withstand the subcutaneous inoculation of moderate amounts, but are very susceptible to intraperitoneal inoculation. Intravenous injections are exceedingly toxic for rabbits, and a fatal cholera-like condition with localization of the organisms in the intestines and intestinal mucosa has been produced in this way (Thomas).

Susceptibility of Man.

A number of cases are recorded in which investigators while working with cultures have become infected with cholera, the cases running typical courses which sometimes ended fatally (Pfeiffer, Pfuhl and others). That not all persons are equally susceptible to the disease is shown in the few instances in which infection has been attempted deliberately; some contracted the disease, at least one case ending fatally, whereas in others either a mild infection or none at all took place.

Endotoxin.

The essential poison of the cholera vibrio is intracellular, and becomes free only after solution of the bacterial cells. Cultures which are killed carefully as by chloroform vapor (Pfeiffer) are highly toxic, although the fluid alone is non-toxic. Young cultures entirely free from bacteria have little or no poisonous action. The toxicity of older bouillon filtrates is due partly to solution of the bacteria with consequent liberation of endotoxin, and perhaps also to secondary disintegration products which have a certain toxicity. The soluble toxin of Metchnikoff, Roux, and Taurelli-Salimbeni is a dissolved endotoxin and not a secretion of the living cells, according to Kolle.

Pathogenesis.

Koch considers that cholera is an acute infectious process involving the intestinal epithelium, whereas the general condition is one of acute intoxication. It is assumed that the condition in the intestines corresponds to that in the culture media, i. e., that here,too, no true soluble toxin, comparable with that of diphtheria or tetanus, is secreted, but that the toxin which eventually reaches the circulation is that which is liberated from the bacteria after the latter have been dissolved by the bacteriolysin of the plasma, or perhaps by the leucocytes. Doubtless a great deal of endotoxin is liberated in the intestinal canal, but it is Koch's conception (cited by Kolle) that the primary intoxication comes from those organisms which have penetrated between and beneath the epithelial cells and here have undergone solution. One effect of the toxin in this situation is to cause desquamation of the intestinal epithelium, as a consequence of which rapid absorption of the toxin from the intestinal canal takes place through the denuded surface. This theory supposes that the toxin is not readily absorbed through the intact epithelium. The living vibrio has never been cultivated from the blood.

The changes in the intestines depend on the duration of the infection. In cases which prove fatal within a few hours the mucosa shows only moderate general reddening, which is intensified at the borders of Peyer's patches and the solitary follicles. The intestinal contents are of a rather clear fluid nature in which are suspended flakes of mucus and epithelium; the fluid may be tinged with blood. With a longer duration of the disease the destructive processes in the mucosa become more intense, and consist largely of desquamation of the superficial epithelium and intense congestion of the denuded submucosa. In the more prolonged cases, "cholera-typhoid," the mucosa, especially above the ileocecal valve, may show diphtheritic necrosis. The serous surface of the intestines is injected. The kidney shows parenchymatous degeneration.

(To be continued.)

Clinical Report

A CASE OF GENERAL INFECTION BY THE DIPLOCOCCUS PNEUMONIÆ.

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Patient.—Mrs. P., aged 26. Family history negative. The patient had lived a questionable life, and about three years ago, after failing in general health, she was thought to be dying. No specific history could be obtained.

Examination.—The physician called found the patient with a high fever, coughing and expectorating. Right lung was tympanitic in areas and dull in other areas. The sputum was examined several times for the tubercle bacillus, but none was found. There were macular-like blotches on hands and face, especially on the forehead; there were lesions of herpes on the lips, which were swollen; there was no itching, no pain.

Treatment.—No diagnosis was made, though the patient was put on tuberculosis treatment. She seemingly recovered and the macular eruptions scaled off.

Subsequent History.—On June 22, 1905, my attention was called to the patient, who had been treated by the city physician, Dr. John B. Jackson. Seven days previously the patient complained of fever, vomiting and slight discomfort in the left elbow. During the five days after onset, temperature, pulse and respiration increased, but with no signs in the lungs or elsewhere to account for the symptoms. At the end of five days, the right lung showed distinct signs of pneumonia in the upper lobe and the elbow became swollen, red and tender. The urine showed much albumin, with coarsely granular and hyaline casts.

June 22: The seventh day after coming under medical care the pulse was 150, temperature 102, respiration 78, and the abdomen was distended. Till she died she was conscious, not especially weak, but very cyanotic and distressed.

Autopsy.—The autopsy showed some interesting points, and these only will be mentioned.

Pleuræ: Under the sternum, there were pleural thickening and adhesions, which, on examination, showed no tubercles; there were many pus cells, many blood vessels containing pus cells, hyaline degeneration and small, round-cell infiltration.

Lung: In the right upper lobe, there was gray hepatization; the remainder of the lung was edematous and congested. There were hemorrhagic areas and many pus cells.

Glands: The bronchial lymph glands showed congestion.

Kidney: The kidneys were congested, and in the cortex there was some small round-cell infiltration and an increase in the connective tissue.

Pelvic organs: These were normal, except for one or two small ovarian cysts.

Heart: This organ was slightly enlarged; the right ventricle was empty except for a large white clot, which obstructed the valves and extended into the auricle and pulmonary artery, the wall of which was of unusual firmness, white and glazed.

Right elbow: This was swollen, firm and red. On opening the joint a thin yellow pus presented, smears and cultures from which gave pure *Diplococcus pneumoniæ*. There was no erosion. Cultures and smears from the heart's blood and lungs gave pure cultures of the *Diplococcus pneumoniæ*.

Pathologic diagnosis: Purulent pleurisy: gray hepatization of right lung: antemortem clot; general infection and localized infection, with *Diplococcus pneumoniæ*.

Compulsory Notification of Tuberculosis.—This is a notifiable disease in Victoria. The *Intercolonial Med. Jour.* states that a physician has been fined for not complying with the law.

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THE AGGRESSIN THEORY.

Virulence, resistance, susceptibility and the like are terms commonly used with reference to infectious diseases to express certain properties of the infecting and the infected organisms. While they are useful, still it is true that very little is known of the real nature of the conditions designated. A great part of the experimental work now being done in infectious diseases is carried on with a view of making our knowledge on such points more precise and it is probable that in time these words will be replaced by more exact ones as new facts accumulate. Metchnikoff's phagocytic theory, Ehrlich's side-chain theory, the opsonic theory of Wright and Douglas have been of great service in elucidating many of these little understood phenomena and are opening up new problems of great practical importance.

A further contribution has recently been made to the problems of virulence and immunity in the form of the "aggressin theory" of Bail.[1] Apparently it grew out of an attempt to explain the so-called "phenomenon of Koch"—an observation made years ago by Koch—to the effect that tuberculous animals when inoculated intraperitoneally with a fresh culture of tubercle bacilli succumb quickly to an acute attack of the disease, the resulting exudate containing almost exclusively lymphocytes. Bail found that if tubercle bacilli, together with sterilized tuberculous exudate were injected into healthy guinea-pigs, the animal died very suddenly, i. e., in 24 hours or thereabouts. The exudate alone had no appreciable effect on the animal, while inoculation with tubercle bacilli alone produced death in a number of weeks. He, therefore, concludes that there is something in the exudate that allows the bacilli to become more aggressive, and hence has called this hypothetical substance "aggressin." He thinks it is an endotoxin liberated from the bacteria as a result of bacteriolysis and that it acts by paralyzing the polynuclear leucocyte, thereby preventing phagocytosis. Heating the exudate to 60 C. increases its aggressive properties rather than diminishes them and small doses act relatively more strongly than larger ones. These facts he explains by assuming the presence of two properties, one that prevents rapid death, is thermolabile and acts feebly in small doses, and one that favors rapid death and is thermostabile. He assumes that in a tuberculous animal the tissues are saturated with the aggressin and when fluid collects in the body cavities, as it does on injection of tubercle bacilli, it contains large quantities of aggressin which prevent migration of the polynuclear leucocytes, but not the lymphocytes, and hence allows the bacilli to develop freely, producing acute symptoms. In the peritoneal cavity of the normal animal, injected with tubercle bacilli, on the other hand, are large numbers of polynuclear leucocytes which engulf the bacilli, thus inhibiting their rapid development, there being here no aggressin to prevent phagocytosis.

Now this theory has been applied to a number of infections, including typhoid, cholera, dysentery, chicken cholera, pneumonia and staphylococcus infections. In all similar results have been obtained as with tubercle bacilli. When exudates, produced by virulent cultures of these various organisms and properly sterilized, are injected with fresh cultures into an animal, death occurs in much shorter time than when the organisms alone are injected.

Moreover, it has been possible to immunize animals against these various infections by repeated injections of the aggressin in the form of exudates. This results in the formation of an "antiaggressin," which opposes the action of the aggressin, thereby enabling the leucocytes to take up the bacteria and thus to protect the animal. This has been done in staphylococcus, dysentery, typhoid, cholera, pneumococcus, and chicken cholera infections in animals. In addition a very marked agglutinative property of the blood is acquired for the bacteria in the animals so immunized.

Naturally, a theory of this kind is certain to be criticized and we find that Pirquet and Schick[2] have raised the objection that is entirely unnecessary to assume the presence of an "aggressin," concluding that all the facts observed can be explained by the formation of antibodies by the tissues. They also call attention to the fact that analogous phenomena of hypersensitiveness occur in other conditions than bacterial infections, as, for instance, in the so-called "serum disease" (*Serumkrankheit*) in which after one injection of alien serum a second injection of serum may cause very profound and acute symptoms.

It is a curious fact that in the several contributions already made on this subject by the German investigators apparently not one word has been said with reference to the possible rôle that the opsonins of Wright and Douglas may play in the explanation of the phenomena described. The opsonic theory, i. e., that certain substances in the serum prepare bacteria for phagocytosis, certainly rests on a secure basis. In the normal animal phagocytosis may be assumed to take place freely because opsonins are present in the fluids; in an infected organism the opsonins may be reduced in amount; we know that many bacteria, living and dead, absorb opsonin. Consequently, the exudates and the tissues of the infected animal would contain less opsonin. Hence phagocytosis would be diminished, and bacteria injected under these circumstances would develop more freely and largely unimpeded by the natural defenses so far as represented by phagocytosis. When sterilized bacterial exudates are injected, the opsonins normally present may be fixed by bacterial remnants and possibly neutralized also by proteins and other substances in the exudate. We know that complements and opsonins are very sensitive to chemical and other influences, and the introduction of exudate with bacteria, as in Bail's experiments, may, therefore, neutralize so much opsonin that active phagocytosis is suspended. Opsonins are destroyed by heating serum from 60 to 65 C. and this may explain the greater activity of infection described by Bail on injecting heated exudate; in this case, the little opsonin possibly present in the exudate was destroyed and phagocytosis still further crippled. Bail's explanations of the effect of heat on the exudates certainly appear somewhat labored. Now, what has been said here with reference to opsonin and its fate in infected animals and by mixture with exudate applies with equal force to complements on which depends the destruction of bacteria by lysis. For these and other reasons that can not be discussed now, it is evident that Bail's "aggressin theory" requires much further investigation, with special reference to opsonins and complements before its real value may be determined.

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[1] Wiener klin. Wochft., No. 9, 1905. Wiener klin. Wochft., Nos. 14. 16, 17, 1905. Berliner klin. Wochft., No. 15, 1905. Zeit. f. Hyg., vol. 1, No. 3, 1905. Arch. f. Hyg., vol. lii, pp. 272 and 411.

[2] Wiener klin. Wochft., No. 17, 1905.

CELL PROLIFERATIONS IN GROWTH CENTERS AND THEIR RELATIONS TO REGENERATION AND TO TUMOR FORMATION.

Through the researches of embryologists it has been learned that, during the development of the more highly differentiated multicellular organisms, the cell divisions by karyokinesis, which are at first diffusely and more or less evenly distributed over the whole "cell state," gradually come to be definitely localized and regularly grouped. This localization and grouping of the karyokineses is a process which stands in intimate causal relation to the shaping of the form of the embryo, inside and out, as well as to the differentiation of the individual organs. In the places, then, where karyokinetic figures are met with in numbers, we have to deal with "construction centers" of the living substance, with areas of most intense growth; a study of the disposition of areas rich in karyokineses is, therefore, of the greatest importance for the localization of growth processes in a developing organism.

In the earliest embryonic period of higher organisms, all the tissues and organs grow by an increase of all their cellular components as long as the cells retain a more or less embryonic or indifferent character. As soon, however, in the course of the histologic differentiation of an organism and its parts, as the individual cell components have assumed a special structure and function and have become, to a certain degree, different from the type of the embryonic mother cell, the conditions of growth change. The specialization of function of the different cells occurs *pari passu* with a depreciation in omnipotence. The more highly differentiated a cell becomes, the more limited it is in the morphogenetic and physiologic potencies of the embryonic cell, until finally it loses temporarily, or even permanently, the capacity for proliferation. Thus, the majority of cartilage cells, bone cells, nerve cells, sensory cells, etc., are largely excluded from proliferative processes relatively early in development. Certain cell groups in these tissues, however, remain embryonic in character, more or less undifferentiated; these are the so-called growth centers, and in them alone is the capacity for cell proliferation retained. Schaper and Cohen[1] have recently made an exhaustive analysis of these growth centers in epithelial tissues and organs and in the central nervous system and sense organs. Their studies, they believe, have an important bearing on regeneration and tumor formation.

Schaper and Cohen assert that it is the persistence of a latent capacity for proliferation in these special growth centers that accounts for the phenomena of regeneration after pathologic disturbance of local correlations of cell function. If the pathologic condition destroys these growth centers, regeneration is impossible. For some tissues in man (ganglion cells, for example), no growth centers persist in the adult at all, and they never regenerate when once destroyed. A few tissues possess the power, even after differentiation, to regenerate by proliferation under special environmental conditions. The lower the degree of differentiation, the greater the power of regeneration; the connective tissue cells, for example, which are but little differentiated, possess great proliferative capacity, as do the epithelial cells which are arranged in one layer. In most tissues, however, only special areas or centers of undifferentiated cells persist, and it is these which participate especially in the processes of repair. When bone is injured, repair, if it is to take place, must be brought about by proliferation of the layer of osteoblasts on the inner surface of the periosteum. If the epidermis is to be regenerated, the palisade cells of the Malpighian layer are the ones to multiply. In necrotic processes in the intestine with formation of ulcers, as in typhoid fever, healing occurs through multiplication of groups of cells at special sites in the crypts of Lieberkühn, where the cells permanently retain an undifferentiated, embryonal character. In the uterus, after menstruation or during the puerperium, the mucous membrane is regenerated from the special "growth centers" in the fundi of the uterine glands. In glands like the liver, kidney and pancreas, some portions of the gland tubules remain less differentiated than others, and it is the cells of these which multiply in regenerative processes. Thus, in cirrhosis of the liver, the regenerative capacity of the finest interstitial bile ducts becomes evident; in diseases leading to regenerative processes in the kidney, the cells of the straight tubules (not the convoluted) are able to multiply.

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[1] Schaper, A. u. C. Cohen, "Ueber zellproliferatorische Wachstumzentren und deren Beziehungen zur Regeneration und Geschwulstbildung," Arch. f. Entwckgsmech d. Org., Leipz., xix, 1905.

In view of the demonstration of the relation of these "growth centers" to normal development and to physiologic and pathologic regeneration, it is not surprising, perhaps, that Schaper and Cohen should attempt to press them into service to help to explain the origin of atypical non-inflammatory new growths or tumors. It is remarkable how frequently the "growth centers," or the places where embryonal karyokinesis persists longest, turn out to be sites of predilection for the development of tumors. It seems likely that the more exact localization of the "growth centers" will permit us better than ever to localize the starting point of tumors. Thus, if the theory be correct that tumors begin in the "growth centers," then it is likely that primary tumors of the liver will be found to begin in the finest biliary passages, tumors of the intestine in the depths of Lieberkühn's crypts, tumors of glands in the portions of their tubules which are least specifically differentiated, tumors of the epidermis in the Malpighian layer, chondromata in the perichondrium, gliomata in the ependymal wedges in the central nervous system. Thus far but little is known regarding the exact beginnings of tumors, but certain observations tend to support Schaper and Cohen's hypothesis. Partsch, for example, has found that the so-called "root cysts" of the teeth arise from elements of the epithelial sheath of the enamel organ; Ribbert believes that primary tumors of the liver do actually begin in the interstitial biliary capillaries; epithelial cerebral tumors appear to rise most often from the cells of the lowly differentiated choroid plexus.

The view that tumors have their origin in the "growth centers" accords very well with the Cohnheim-Ribbert hypothesis regarding the origin of neoplasms. The latter assumes (1) the presence in the body of cell material capable of proliferation, and (2) a stimulus which incites the abnormal proliferative activity, probably the result of the separation of the particular "embryonic" cell material from its normal organic connections and inhibitions. Schaper and Cohen localize the "proliferative cell material" in their "growth centers."

CONGENITAL TUBERCULOSIS.

There is evidently to be another swing of the pendulum of medical opinion with regard to the inheritance of tuberculosis, and, indeed, it is already well on the path of its next excursion. While a quarter of a century ago tuberculosis was universally conceded to be mainly a matter of heredity, in recent years medical opinion has gone almost entirely to the other extreme and has considered that the direct inheritance of tuberculosis is rather rare. Very few physicians were ready to concede that there was not at least an inherited predisposition to tuberculosis, but the actual transmission of the bacillus *in utero* was considered to take place only very rarely. The idea of contagion, then, practically entirely replaced that of heredity, and if children suffered more frequently from tuberculosis than older persons it was mainly because they were more exposed, and then, too, because they had less vitality resistant to the disease.

One excellent feature of this set of medical opinions with regard to the contagion rather than to the heredity of tuberculosis we hope will be maintained in spite of the change in medical opinion that we foresee. With the idea of contagion in mind, it is recognized that children playing about the floor are much more likely to come in contact with the bacilli of tuberculosis if there are any inmates in the household suffering from the disease and who are at all careless of the precautions necessary to protect others. This means not only carelessness in the matter of direct expectoration, but lack of care when coughing to keep something before the mouth in order to prevent the widespread distribution of material from the lungs on the atomized particles of sputa, which may be coughed to a considerable distance under such circumstances. As the result of the recognition of these dangers much good undoubtedly was accomplished.

There seems no doubt now, however, that the direct transmission of tuberculosis from mother to child is much more frequent than has been imagined. At the meeting of the National Association for the Study and Prevention of Tuberculosis, Dr. Wm. H. Welch of Baltimore declared that there are now many cases in which the presence of congenital tuberculosis has been noted. The principal proof for this is the great frequency with which tuberculosis of the placenta occurs in tuberculous women. Very few mothers who are suffering from tuberculosis in an active form fail to present tuberculous lesions of the placenta, when a careful investigation of that organ for this purpose is made. These lesions occur not only in advanced cases of tuberculosis, but also in the placentæ from patients who present scarcely more than the manifestations of incipient pulmonary tuberculosis. The disease must be in an active and not in a quiescent form, but it has been noted more than once that the strain of pregnancy itself seems to be sufficient to make a hitherto latent tuberculosis awaken into an activity that may prove dangerous for the offspring.

Dr. Welch considers that the rise in infant mortality from tuberculosis, which occurs during the second quarter of the first year of infant life, indicates that there has been a probable infection of the child during the latter part of the intrauterine existence. The incubation period of tuberculosis is not definitely known, but it is considered to be at least of several months' duration. If infection should take place, then, during the last three months of pregnancy it would be within the bounds of probability that the active manifestations of the disease would appear only some three to six months later.

It is not at all surprising that lesions of the placenta should be found. It is now well known that whenever tuberculosis is active and progressive, even though it may be only in an incipient stage, tubercle bacilli find their way into the circulation. They have been discovered repeatedly in the urine, having passed through a healthy kidney without causing serious effects. Not infrequently, however, their passage through the kidney gives rise to an irritative congestion causing a sense of weight in the loins of which consumptives not infrequently complain. That bacilli thus present in the circulation occasionally should find a resting place in the large vascular spaces of the placenta, where the circulation is less active, is only to be expected.

THE RED LIGHT TREATMENT OF SCARLET FEVER.

The treatment of the eruptive fevers by red light is no new proceeding, as there is some evidence that the Chinese and also some European nations employed it centuries ago. That they applied the treatment in the form now suggested seems doubtful, and there is evidence that they neglected to exclude ordinary light from the sick room, and that the hanging of the room with red draperies, and sometimes wrapping the limbs in red cloths, constituted the red light treatment of early days. Toward the end of the last century the work of Finsen put the matter on a scientific basis, and renewed the interest in this form of treatment. The philosophy of the treatment is based on the well-known fact that the so-called chemical rays in light, the blue, violet and ultraviolet, are capable of setting up inflammation in the healthy skin, and therefore are certain to aggravate the inflammation in a skin already diseased from some other cause. Finsen suggested the use of the red light treatment in smallpox particularly, and the results reported have varied, though they have been most encouraging. when the reporter closely followed Finsen's directions. This method of treatment has also been followed with some success in erysipelas, especially by Krukenberg, who has reported both improvement in the skin condition and rapid decrease in the temperature.

Quite recently Cnopf[1] of Nürnberg has reported some results with the red light treatment of scarlet fever which are distinctly encouraging. The method of applying the treatment in these cases is important, as all daylight must be permanently excluded until the eruption of the disease has completely disappeared. The windows for their lower two-thirds should be covered with some tissue completely impermeable to light, while the upper one-third should be covered with ruby red silk. At night the room should be treated as a photographic dark room and only lights with red shades should be allowed. The importance of completely excluding everything but the red rays is demonstrated by some of Cnopf's experiences. He found that even after the scarlatinal rash had apparently disappeared exposure to daylight for two or three minutes sufficed to bring it back. He was compelled, therefore, to make this test in all cases before allowing patients to be subjected to ordinary light. The effect of the red light treatment on scarlet fever is twofold. The fever, which under ordinary treatment usually persists until the rash fades, falls, almost by crisis, and reaches normal in three or four days instead of in seven or eight days, as is the case under ordinary treatment. The skin lesion is also markedly affected, the red color so characteristic of the disease gradually fading. The complications of the disease are apparently not affected, as in several of Cnopf's cases secondary angina or pneumonia served to cause an increase in the fever as usual.

The question naturally arises whether it is the red light or merely the exclusion of all light which is responsible for the changes noted by Cnopf. The query is an old one. Years ago it was noted that exclusion of all light from smallpox patients led to less pitting than daylight treatment. Cnopf, however, thinks that the mere exclusion of daylight is not the responsib'e agent. but that the red rays have an actual curative effect. How this effect is produced he does not pretend to say. However much we may be lacking in explanations of these observations, and however much we may doubt the actual value of the treatment, the success achieved seems to indicate that the method is worthy of more extended trial.

COLLIER'S WEEKLY AND PATENT MEDICINES.

One of the most encouraging signs of the times is the fact that several lay journals have come out against the patent medicine evil. The opposition in most instances, however, consists in simply refusing to accept patent medicine advertisements of any kind. The most persistent, consistent and logical fight is being waged by *Collier's Weekly,* and there is scarcely a week but something appears that is to the point. Here is its comment on peruna and yellow fever, to which we referred editorially last week. It bears the heading, "Murdered by Advertisement."

> Patent medicine horrors never reached a point of deeper degradation than in the yellow fever troubles of the South. Mr. Samuel H. Adams, whose series of articles will begin probably in five or six weeks, will hardly have anything more startling to narrate than the incredible performance of "Peruna" in alliance with the New Orleans *Times-Democrat.* This sheet has accomplished a feat of prostitution which, considering its pretense to respectability, probably sets the record. While the South is struggling to check a peril of the direst magnitude, this newspaper publishes an interview with "Dr. Hartman," with the familiar allegation that he "said in part," and all other devices to make it look like an important piece of news. Its headlines are: "How to Avoid Yellow Peril. An Interview with Dr. Hartman Concerning the Yellow Plague." To the reader this is the genuine opinion of a physician. He can not know that Dr. Hartman is the head of the Peruna Company, and that the *Times-Democrat,* in whom the reader presumably has some trust, is selling itself and the safety of its constituents for a bag of gold. "A summary of this interview," the *Times-Democrat* informs us, "is being spread broadcast over the United States *for the benefit of yellow fever sufferers.*" The gist of it is that, while screens

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[1] Münch. med. Wochft, No. 32, 1905.

> and other precautions are advisable, Peruna should be taken at once and continued during the whole course of the epidemic. "'I feel sure,' the doctor went on to say (!), 'that any person following this advice is in no danger of taking yellow fever.'" For anybody who believes we have taken too seriously the patent medicine evil and newspaper complicity therein, this unspeakable outrage should be a lesson. Is there anything to which men can not be led by money? To own a newspaper and hire it out to perilous fraud in an emergency like the yellow fever danger almost surpasses one's belief in human greed. No more disheartening proof of the need of the crusade which we have begun could possibly have been offered.

Evidently the writer of this article thought that the *Times-Democrat* was the only newspaper at fault. This is not true. Many of the Southern newspapers had the same advertisement inserted as telegraphic news, and these should accept with as good grace as possible the righteous castigation given them by *Collier's Weekly*. We understand that Mr. Samuel Hopkins Adams, who for months has been quietly conducting an investigation for this purpose, is preparing a series of articles for the weekly which will state facts regarding patent medicines in plain language. Judging from the following, he will also take up the quack doctor side:

> The quacks are not to be omitted. The same investigator, whose inquiries into patent medicines are almost completed, is gathering material about medical abuses also. He hopes to have the opening article ready for publication in September. It will give an outline of the patent medicine industry, and will be followed by a number of articles on particular medicines and groups of medicines, beginning with Peruna. The quacks will follow in their turn.

Collier's Weekly deserves the support of every member of the medical profession.

THE EPIDEMIC RECEDING.

The situation in New Orleans continues to improve, while in the remainder of Louisiana there are some seriously infected points, but there is no longer a general increase of new cases and foci. The storm center of news for the past week has rested in Mississippi, with a lively subsidiary center at Memphis. Another town conspicuous for its boasted "air-tight" shotgun quarantine—Vicksburg—has been compelled to admit the presence of infection. In the case of several towns, infection has been discovered, or admitted, only after a person recently from the town has fallen ill with the disease elsewhere, thus leading to a tracing back of the infection. A notable and welcome feature of the week's news has been the *volte* face of Governor Vardaman. His views on quarantine and on methods of fighting the epidemic have come quite into accord with those of the best posted medical men, and for this much credit is due his willingness to be convinced. Arkansas has witnessed the most depressing of the week's events. Governor Jefferson Davis set aside the quarantine methods of the State Board of Health and four medical members, including the president and secretary, promptly resigned. Governor Davis also refused Surgeon-General Wyman's request to permit Passed-Assistant Surgeon Goldberger to pass by rail through a few miles of Arkansas in order to reach another point in Louisiana where his services were badly needed. From Southern Illinois comes news that persons turned back by the quarantine at Cairo are going up the Ohio and Wabash rivers and then entering the state. Along the Gulf coast the infection steadily spreads in mild form. So far as New Orleans is concerned, it now seems possible to state that modern methods have won. It is depressing to read that it was necessary to arrest a physician for failing to report cases. As a whole, the medical profession and the majority of the citizens are pulling together splendidly, and the result already is a matter for pride.

HEPATIC TOXEMIA AS A LATE EFFECT OF CHLOROFORM.

Of late years chloroform has been generally recognized as a more dangerous anesthetic than some others. Its toxic action, however, is usually manifested early, and as regards late effects it has been considered, perhaps, even safer than ether, the irritant action of which on the lungs, etc., is often dreaded. The communication of Drs. Bevan and Favill in this issue of The Journal and the extensive literature of similar cases which they quote suggest a peril in the late effects of chloroform which is evidently not generally recognized by the profession. It is probable, as they point out, that in many cases hepatic toxemia from chloroform is slight and shown only by transient jaundice and nervous symptoms of comparatively slight import, but that it may be overwhelmingly fatal seems to be indicated by the case they report and by others that they quote. The dangers of prolonged administration of chloroform are shown by the fatty-liver degeneration produced in animals, which should itself be a warning against its prolonged use in any surgical operation. Its danger in young children and under the special conditions which Bevan and Favill enumerate as increasing the susceptibility to these late effects should be considered. It is not likely that chloroform will pass altogether into disuse, at least not until some efficient substitute, with all its advantages, has been discovered, but we are learning apparently more of its dangers all the time. It is something of a question whether, while underestimating the possible late effects of chloroform, we have not also overestimated those of ether. There seems to be much yet to be learned about anesthetics and their use.

THE SANITARY PROBLEM OF PANAMA.

Professor Vaughan's communication elsewhere in this issue states the conditions of success in the construction of the Panama canal as succinctly and forcibly as can be done. That the problem is first of all a sanitary one is well known to all medical men who have paid any attention whatever to the conditions existing on the Isthmus. Nevertheless, the difficulties which it involves have been too much ignored and, as Dr. Vaughan says, this was the main reason of the failure of the French canal company to complete its work. The canal can be built, as he admits, without special measures for sanitation, but at a cost of human life and treasure that is almost incalculable, to say nothing of the danger he mentions of involving other regions. The first thing to do is to render the region habitable for the great number of laborers of whatever nationality that will have to be employed for years in the excavation and construction work. The task will be easier for us than for our predecessors, since we know more of the natural history of the diseases that must be combated. It is not the yellow fever that really is the most formidable of these. The ever-present malaria, especially in its pernicious form that is so common on the Isthmus, is a far more dangerous because a more persistent and less manageable foe. That the mosquito can be absolutely eliminated as a disease factor, especially on the low Atlantic side, is perhaps too much to expect, but malaria can be controlled even there to a great extent. It is a comparatively small part of the work at most that remains to be done in that region, and over the rest of the line of the canal the natural conditions are far more favorable. It is possible, moreover, that besides the protective vaccination from yellow fever suggested by Professor Vaughan, a careful study of the subject may develop some method of procuring sufficient immunity against the more serious forms of malarial disease or some parasite, as he intimates, that may be fatal to the mosquito. If the canal work can develop such results, it will be worth more to the world than the commercial value of the completed link of transit from ocean to ocean. Such an idea is not altogether visionary. No one expected from our contest with Spain sanitary results such as were attained, and which have been justly said to have been worth more than all the conflict cost. Aside from such possibilities, however, the sanitation of the Isthmus, to a very large extent, is practicable with the means at hand and it is a misfortune that these have not been fully utilized before. There are encouraging indications that the present executive management of this great work appreciates these needs and is taking steps to meet the conditions much in the way that our correspondent indicates. The undertaking is a national one. Our reputation as a people is largely involved in its success. It will be a pity if, through failure, it discredits American intelligence and efficiency. It is only by availing ourselves of every possible aid that sanitary science can give that the work can be creditably and successfully accomplished.

CASUALTY FRAUDS.

Continued exposure of the methods of those who make a business of getting injured and of collecting damages gives strong promise of ruining the industry. Theodore Waters contributes a fourth paper (in September *Pearson's*) recounting his own experiences in alleging accidents that never happened. In one city he was "hurt" early in the morning, and before noon lawyers' runners urged him to sue on a contingent fee contract, offering to furnish without additional charge all necessary witnesses and testimony. Once the retainer contract is signed the really injured person is thereby prohibited from accepting any proffered settlement, except through the retained lawyer. This shyster lawyer fees court attachés, hospital internes, police, notaries and factory foremen, all of whom can furnish valuable information and assistance. It is alleged that Chicago presents the largest number of illustrations of the "fake doctor" working with the "shyster lawyer" to defraud corporations. "For it can be laid down as an axiom that if there were no shyster lawyers, or doctors whose practices are without the code of medical ethics, there would be no profession of getting hurt." The strenuous methods of the medical profession to rid itself of this and similar impediments are not mentioned, probably because unknown to the writer. On the other hand he speaks decidedly of the evident degeneration of the morale of the legal profession during the last fifty years.

THE SIGNIFICANCE OF ACETONURIA FROM THE SURGICAL STANDPOINT.

The appearance of acetone in the urine has long been recognized as a danger signal in cases of diabetes, although investigation leads to the belief that the symptoms of intoxication often present under such conditions are in reality due to diacetic acid and B-oxy-butyric acid, of which the acetone appears to be a forerunner. The important practical significance of the detection of this state of acidosis resides in the possibility of neutralizing the condition by the administration of sodium bicarbonate. It has been observed further that a similar condition is not rarely encountered in cases that pursue an unfavorable course when submitted to anesthesia for the purpose of surgical intervention. With the object of determining the validity of previous observations and inferences in this connection, Dr. Joshua C. Hubbard[1] examined for the presence of acetone and diacetic acid the urine from 145 patients admitted during the summer of 1904 to one of the three surgical services of the Boston City Hospital. Acetonuria was found in 9 cases, associated with diacetic acid in 4, but all of these pursued a course perfectly consistent with the injury or disease present, and in none could any abnormality in convalescence be discovered that could be attributed to the state of the urine. In 4 of these cases diacetic acid also was present in the urine. In 5 cases in which acetone or diacetic acid or both were found during convalescence there was possibly a momentary disturbance, which yielded readily to treatment with sodium bicarbonate, administered in doses of 30 grains thrice daily or oftener. In 2 cases in which alarming symptoms developed and acetone was found in the urine, death ensued. The conclusion is accordingly reached that the presence of acetone in the urine, alone or in association with diacetic acid, in conjunction with symptoms of themselves alarming, especially vomiting, adds to the gravity of the prognosis.

COMMENDABLE SOCIETY WORK.

As the organization movement gathers momentum, medical societies here and there meet emergencies with effective society action. These deserve mention both to receive merited praise and, more particularly, to let all other societies know of the work accomplished and of the methods employed. By knowing what others are doing, local societies will be stimulated to do better work for the public and for the profession. A notable recent instance of collective medical aid to a suffering community is a "Circular of Information addressed to the Medical Profession for distribution among Trained Nurses and others entrusted with the care of yellow fever patients," that has been issued in attractive, well-printed form by the Orleans Parish Medical Society—at New Orleans. The circular is composed especially of an extract from the proceedings of the society's meeting on August 12, 1905. At this meeting Dr. Rudolph Matas addressed the society on "New Duties and Responsibilities Imposed on Trained Nurses and Other Persons Entrusted with the Care of Yellow Fever Patients, in Consequence of the Newly-acquired Knowledge of the Mode of Transmission of this Disease by the Mosquito." He pointed out the fact that the physician could only give the directions as to the new methods of prophylaxis, while others must execute them. In all, the brochure contains but 13 pages of well-digested and well-classified information regarding mosquitoes, fumigation, prophylaxis, etc., and it is admirably adapted to its purpose as well as being a very creditable medical society enterprise.

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[1] Boston Med. and Surg. Jour., June 29, 1905, p. 744.

Medical News

ILLINOIS.

Smallpox.—Four cases of smallpox are said to have developed in Monmouth.——An inspector for the State Board of Health was sent to Hull, White County, August 28, where an epidemic of smallpox was reported.

Personal.—Dr. William C. Clarke, Cairo, has resigned his position as chief health inspector.——Dr. William A. Balcke, Cropsey, has returned from Bloomington, where he underwent an operation for appendicitis.——Dr. W. R. Hamilton, an aged physician of Peoria, was knocked down by a buggy and seriously injured, August 30.

Hospital Notes.—The hospital fund for Taylorville Hospital now amounts to more than $2,300.——The Misses Alice and Caroline Graham, Washington, D. C., formerly residents of Canton, propose to furnish the necessary grounds and to erect a public hospital building thereon at Canton, to cost about $15,000, and containing about twenty rooms, under the condition that an endowment of $20,000 shall be provided, that the hospital shall be free to all schools of medicine, and that at least five rooms shall be available for charity patients.

Illegal Practice.—John Pattie, Peoria, who was found guilty of practicing medicine without a license and fined $100 and costs, has appealed from the decision of the court, claiming that he practiced under the special direction of a licensed physician.——Dr. James M. Fernan, a "Quaker medicine man," known as Brother Paul, who is under indictment at Freeport under fourteen counts, five for selling drugs in violation of the state law, five for practicing medicine without a license from the State Board of Health, and four for selling medicines in the city without a license, has been found guilty and sentenced to pay fines with costs amounting to more than $2,000. Brother Paul has left town.

Chicago.

Personal.—Dr. Casey Wood has returned from Europe.——Dr. Louis L. McArthur has gone to attend the International Surgical Congress at Brussels.

Corner-stone Laid.—The corner-stone of the new Washington Park Hospital, Vincennes Avenue, was laid September 4. Among the speakers were Professor Mauritzon of Augustana College and Rev. A. J. Lofgren. The building will cost $50,000 and is expected to accommodate 105 patients. Dr. Carl O. Young is physician to the institution.

Deaths of the Week.—There was a reduction in the annual death rate, as compared with the week previous, from 14.68 per 1,000 to 13.25 per 1,000. The total number of deaths was 510. Of these 130 were due to acute intestinal diseases, 63 to consumption, 40 to violence, including suicide, 37 to heart diseases, 30 to Bright's disease, and 22 each to pneumonia and cancer.

August Mortality.—During August 2,436 deaths were reported, equivalent to a death rate of 14.31 per 1,000. The death rate for August, 1904, was 12.90, and that for July, 1905, 13.48 per 1,000. Of the deaths 727 were of infants under 1 year, and 246 of children between 1 and 5 years. Among the causes of death were: Acute intestinal diseases, 638; consumption, 224; violence, including suicide, 210; heart diseases, 153; Bright's disease, 149; pneumonia, 119, and cancer, 111.

INDIANA.

State Board Enjoined.—The State Board of Medical Examination and Registration has been temporarily enjoined from revoking the license of Dr. John Milton Rhodes, Indianapolis, who is charged with gross immorality.

Fined.—Dr. Albert E. Sterne, Indianapolis, was fined $25 and costs, August 1, for exceeding the speed limit with his automobile.——Dr. Joseph A. Hallanan, Logansport, was found guilty of assault and battery July 29, and fined $25 and costs.

Medical School for Purdue.—At the meeting of the trustees of the Purdue University, held September 1 in Indianapolis, the university accepted the gift of the Medical College of Indiana, which has a property value of $100,000. The college will not be moved to Indianapolis, but will continue its work as a part of the university.

Appointments.—The newly appointed Board of Health of Jeffersonville, of which Drs. David C. Peyton and William H. Sheets, Jeffersonville, are the medical members, has organized and elected Dr. Sheets secretary.——Dr. Mary L. Widdop, Indianapolis, has been made a member of the medical staff at the Indiana State Soldiers' Home, Marion.——Dr. William S. Walker has been elected secretary of the school board of Lafayette.——Dr. William R. Cravens, Bloomfield, has been elected surgeon to the Illinois Central Railroad.

Ill and Injured.—Dr. James N. Hurty, secretary of the State Board of Health, is confined to his bed with lumbago.——Dr. Percy E. Terry, Rochester, is reported to be critically ill.——Dr. Rufus F. Blount, Wabash, fell down the stairs leading to his office August 25, fracturing his clavicle.——Dr. Arthur W. Tucker, Logansport, was operated on for appendicitis August 20.——Dr. Omer P. Phares, Liberty, fell down stairs August 7 and sprained his ankle.——Dr. Seymour C. Wilcox, New Albany, is reported to be critically ill.

Abroad and at Home.—Dr. Charles E. Barnett, Fort Wayne, will start for Europe early in October.——Dr. David E. Mattison, Marion, sailed for Europe August 20.——Dr. James E. Johnson, Marion, has returned from Europe.——Drs. Thomas W. Moorhead, Myron A. Boor, Joseph H. Weinstein and Leo J. Weinstein, Terre Haute, have returned from an extended trip to Europe.——Dr. Austin Funk, New Albany, leaves for Europe this month.——Dr. Frank A. Morrison, Indianapolis, returned July 27 after five months in Europe.——Dr. David R. Ulmer, Alexandria, is in Scotland.——Dr. William F. Clevenger, Indianapolis, returned from Europe July 28.

Sickness and Deaths in July.—The deaths in July numbered 2,774, and in the same month last year 2,772. Diarrheal diseases were reported as more prevalent and the deaths from this cause numbered respectively 361 and 296, an increase this year over last of 21.9 per cent. Almost 80 per cent. of all diarrheal troubles occur in infants and very old persons. The deaths from preventable causes were: Consumption, 321; typhoid fever, 62; diphtheria, 16; whooping cough, 23; pneumonia, 63; cerebrospinal meningitis, 32; influenza, 6; puerperal fever, 9; violence, 174, and smallpox, 3. The cancer deaths numbered 110, or 6 fewer than in July of 1904. The deaths under 5 years of age numbered 791, or 29 per cent. of the total, and the deaths 65 years of age and over numbered 592, or 21.9 per cent. of the total. The consumption mortality was less than in July, 1904. Of the 321 deaths from this cause 229, or 71.3 per cent. of the decedents, were between the ages of 15 and 50. Only 20 cases of smallpox with 3 deaths in 7 counties were reported. In July, 1904, there were 114 cases, with 5 deaths in 21 counties.

KENTUCKY.

Did Not Report Fever.—For failure to report a case of scarlet fever Dr. David A. Coyle, Lexington, was fined $25 and costs August 22.

Typhoid Epidemic.—An epidemic of typhoid fever is reported at Vine Grove.——There have been reported more than 50 cases of typhoid at Clay. The epidemic is now said to be under control.

Diphtheria.—Diphtheria is so prevalent in Elmsville and Harvieland, Franklin County, that the county board of health has prohibited all public gatherings.——Diphtheria is prevalent in Owensboro.

Personal.—Dr. Thomas E. Moss, Woodville, sailed from Seattle August 31 for the Philippine Islands.——Dr. William T. Leachman, Louisville, who has been in bad health for several months, has been taken to Martinsville, Ind.

LOUISIANA.

Stricken by Fever.—Drs. James T. Wolfe, New Orleans, and Louis A. Mereaux, St. Bernard, were stricken by yellow fever August 30.

Premedical Course.—The authorities of the Louisiana State University have decided to establish a premedical course, beginning in 1906.

Clinic for Women and Children.—The New Orleans Dispensary has been established at 1824 Annunciation Street for the purpose of giving free medical aid to poor women and children. Dr. Sara T. Mayo is in charge of the enterprise.

Personal.—Dr. D. N. Fletcher, Poland, was thrown from his horse, fracturing his arm near the elbow.——Dr. Thomas H. Watkins has been elected secretary of the Lake Charles Board of Health, vice Dr. Melvin F. Howe, resigned.

MARYLAND.

Baltimore Personals.—Dr. Eugene F. Cordell has resigned the position of editor of the *Hospital Bulletin* of the University of Maryland.——Dr. Charles F. Blake is critically ill with typhoid fever.——Dr. Emily Petersen has gone to Minnesota for several weeks.

Health Report.—The weekly report of the Baltimore health department for the week ended September 2 shows but 5 deaths from typhoid fever, although 143 cases of the disease were reported. For the entire month of August the following figures are here given: Deaths, 875; births, 915; deaths under 5 years of age, 361; deaths from typhoid fever, 34; cases reported of same, 324; mortality from Bright's disease increased from 36 in August, 1904, to 69.

Crisfield Marine Hospital.—A meeting was held in the Crisfield opera-house last week in the interest of the General Marine Hospital of that city, Dr. Jacob F. Somers presiding. The hospital is intended for poor sailors, who are brought there during the winter and are dependent on the charity of the place. The Woman's Christian Temperance Union has the work in charge and has almost enough money in hand to begin with. Among the directors are the state comptroller, Drs. Gordon T. Atkinson and W. F. Hall. Crisfield is one of the greatest centers of the Chesapeake oyster industry.

[illegible]—The question of legislation governin[illegible] ies is being discussed by the Baltim[illegible], the state's attorney and the coroners. At present undertakers are allowed to embalm bodies prior to the issuance of death certificates by attending physicians, and it is consequently possible for a crime to be committed and for the perpetrator to go undetected, since arsenic and bichlorid of mercury enter largely into the fluids used. Dr. C. Hampson Jones suggests the creation of the office of state chemist, whose duty it should be to be ready at all times to make an analysis.

MASSACHUSETTS.

Bequests.—By the will of the late Dr. Louis A. Prefontaine there is devised to Mercy Hospital, Springfield, a powerful magnet, and $5,000 to be applied on the indebtedness of the institution.

Medical Frauds Denied Use of Mails.—Fraud orders have been issued against J. Tige, S. Ray, Amos Ball & Co., Dr. Charles C. Rothfuchs, Dr. Longest and Dr. Herrick Medical Co., all of Boston.

Will Build Leper Hospital.—The State Board of Charity has purchased the island of Penikese, in Buzzard's Bay, and a leper hospital will be constructed there. It is expected the building will be ready for occupancy in the autumn.

Typhoid in Worcester.—At the present time there are more than 40 cases of typhoid fever in Worcester and four deaths have occurred, caused by milk supplied by a single milkman, who has been forbidden by the Board of Health to sell any more milk.

Personal.—Dr. Maurice H. Richardson, Boston, has gone to Brussels to attend the International Surgical Congress.——Dr. Henri T. Gabowry, Taunton, was thrown from his buggy August 29 and sustained a slight fracture of the base of the skull.——Dr. William F. Whitney, Boston, has succeeded the late Dr. Edward S. Wood as expert on blood.

MISSOURI.

Personal.—Dr. Franz J. T. Specht, physician in charge of the North Side Dispensary, St. Louis, has resigned.

Low Death Rate.—The death rate for St. Louis for July is reported to have been at the rate of 16.39 per 1,000. During the month 887 deaths were reported, 277 of which, or 31.2 per cent. of the total, were in children under 5 years.

Expected No Deaths.—In the construction of the new City Hospital, St. Louis, it was recently discovered that no provision had been made for a dead house, and ground has been broken for the construction of this relatively important department of the hospital.

Illegal Medical Practice.—H. H. Morris, an osteopath, who has been practicing osteopathy at Marshall without a license, has pleaded guilty and thrown himself on the leniency of the court. The penalty provided ranges from $50 to $500.——Dr. B. H. Westfall, arrested at Craig, charged with being an itinerant vender of drugs and nostrums without a license, was fined $5 and costs at Oregon.

Hospital Notes.—The St. Louis Skin and Cancer Hospital, which has been established through the influence of the charitable women of the city, has opened its new building at Jefferson avenue and St. Charles street.——About 360 patients, lame, halt, blind and victims of disease or accident, have been moved from the old City Hospital into the new building recently completed.——Arrangements have been made to equip a room in the new Salvation Army Hall, Webb City, for a dispensary for injured miners.——The Knox County General Hospital, Rockland, was formally opened August 14.——A new Emergency Hospital for St. Joseph is now completed and ready for occupancy.——On August 21 the Kansas City Council voted an appropriation of $150,000 from the hospital fund to be used in the construction of a new general hospital.

NEBRASKA.

Hospital Site Bought.—A large new site has been purchased for the Clarkson Memorial Hospital, Omaha, at Twenty-first and Howard Streets.

Asked to Cease Practice.—Dr. George A. Angus, Lincoln, who was charged with cheating during his examination before the State Board of Medical Examiners, has been notified to cease practice, pending a rehearing of his case.

Peculiar Decision.—The Supreme Court holds that the State Electro-Medical Institute of Omaha can not be licensed to practice medicine as a corporation, but that, as a corporation, it may make contracts with physicians to do business and may collect for the services thus rendered.

Personal.—Dr. John K. Maxson, Lincoln, was committed to the Nebraska Hospital for the Insane, Lincoln, August 29.——Dr. Sidney S. Wilson, Nebraska City, is spending the summer in Europe——Dr. F. H. Redmond, Tecumseh, has been appointed ward physician in the incurable ward of the State Hospital at Osawatomie, Kan.——Dr. Edwin W. Cook, Plattsmouth, has been appointed head physician, for Nebraska, of the Modern Woodmen of America——The residence of Dr. Ulysses S. Ammerman, Reynolds, was totally destroyed by fire, August 26. The loss is about $2,000, with no insurance.——Dr. James W. B. Smith, Albion, has been appointed assistant surgeon, N. G., Neb., with the rank of first lieutenant, and has been assigned to the Second Infantry.

NEW YORK.

Permit Refused.—Thomas F. O'Brien, Buffalo, against whom a "no bill" was returned by a grand jury on the charge of violating the tenement laws, applied to the health department for a permit to run a lodging house and was denied.

Fraud Order Issued.—A fraud order has at last been issued by the government against the New York Institute of Physicians and Surgeons and "Prof." Thomas E. Adkins, its president, of Rochester. They advertised in newspapers and magazines extensively of their wonderful "vitopathic" cures (?).

All Bids Rejected.—The board of award of the Treasury Department, which has been examining the bids for the construction of the Marine Hospital to be built in Buffalo, has just reached the decision to report in favor of the rejection of all the bids. At present the Marine Hospital patients are being cared for by contract at the new Niagara Hospital.

Buffalo Personals.—Dr. Roswell Park has subscribed $1.000 for the formation of a school of liberal arts at the University of Buffalo, and Dr. Edward Clark $100 for the same purpose.——Dr. Benjamin G. Long has returned from the Pacific Coast.——Dr. Monroe Manges has returned from Atlantic City.——

Dr. Irving P. Lyon returned from a month's stay in the Adirondacks.——Dr. Allen A. Jones has returned from the coast of Maine.——Dr. Ray H. Johnson is taking a trip up the lakes.——Dr. Lawrence G. Hanley has resigned from the civil service board.

Fair for German Hospital.—A gift fair for the benefit of the German Hospital is to be held in the fall. Arrangements are being made on a large scale and it is expected not only that the entire indebtedness of the hospital will be paid, but that sufficient cash will be forthcoming to erect nurses' quarters and a new wing for private wards.——At a recent meeting of the medical staff sufficient was subscribed to pay for a team and ambulance.

New York City.

Bequests.—The German Hospital, Brooklyn, has received a bequest of $5,059.87 from the estate of Christopher Kunzel, deceased, and one of $1,000 from the estate of the late Mrs. Julie Achelis.

Laboratory Almost Ready.—The new laboratory of the Health Department at the foot of East Sixteenth Street, which has been in process of construction for a long time, will be ready for occupancy in a few days.

Personal.—Dr. Albert H. Ward, retiring house surgeon of St. Catherine's Hospital, Brooklyn, on leaving the hospital was given a dinner, at which he was presented with a case of surgical instruments.——Dr. Henry A. Baker, New York City, has been made medical director of the Washington Life Insurance Company.

OHIO.

Donations.—John M. Niles has presented to the Champaign Sanitarium his property, valued at $75,000, retaining a life interest in the estate.——The floral festival recently held in Van Wert netted $2,000 to the Van Wert County Hospital.

Hospital Notes.—Dr. William J. Gillette has erected a hospital in Toledo to accommodate 75 patients, which he expects will be ready early in the spring.——Delaware County Hospital, at Delaware, which is now almost complete, will be ready to receive patients early next month.

New Medical Society.—The physicians of Wellsville and East Liverpool have organized a society to be known as the Wellsville and East Liverpool Academy of Medicine. Dr. William M. Calhoun, East Liverpool, was elected president, and Dr. Arthur B. Holland, Wellsville, secretary.

Personal.—Dr. William H. Kanauss, Newark, who was accidentally shot while at target practice last May, has retired from personal work, as he has not yet fully recovered from the effect of the wound.——Dr. Louis L. Syman, Springfield, has resigned as a member of the hospital staff and has been succeeded by Dr. Wallace Ort.

The Afflicted.—Dr. D. B. Van Buren Burkett, Columbus, who was seriously injured a few weeks ago in a street car accident, is convalescent and will soon resume practice.——Dr. Arthur E. Hobson, Flushing, sprained his ankle in jumping from his buggy August 10.——Dr. Lewis J. Feid, Cincinnati, was thrown from his buggy in a runaway accident August 20 and painfully bruised.——Dr. William H. Booth, Salem, is seriously ill with typhoid fever at Lakeside.——Dr. Charles E. Reese, Lancaster, was thrown from his buggy in a runaway accident August 19 and seriously injured.——Dr. John A. Wright, Toledo, was seriously injured by the overturning of his buggy August 24, sustaining bad cuts and bruises.——Dr. Jerome Bland, Bucyrus, is in a serious condition from a recent cerebral hemorrhage.

OREGON.

Medium Fined.—On July 29, Judge Cameron found Louis Schlessinger, Portland, a medium who was accused of practicing medicine without a license, guilty, and fined him $75.

New Building for Medical Department.—Plans have been completed for the erection of a $15,000 building for the medical department of Willamette University, Salem. The building will be of brick and three stories high.

Health Board Changes.—The Mayor of Portland, Dr. Harry Lane, has appointed Drs. Esther C. Pohl, Andrew J. Giesy and George F. Wilson as members of the Medical Board of Health, succeeding Drs. Mae H. Cardwell, William Jones and James F. Bell.

Surgery Dedicated.—A new surgical department for the Good Samaritan Hospital, Portland, was dedicated August 8. Bishop B. Wistar Morris presided, and Drs. Simeon E. Josephi and George F. Wilson delivered addresses. The surgical equipment was presented to the hospital by members of the Couch family at the cost of several thousand dollars.

PENNSYLVANIA.

Philadelphia.

Will Study Cholera.—Dr. Fairfax Irwin, chief of the United States Public Health and Marine-Hospital Service in this city, and chief of the Reedy Island and Delaware Breakwater quarantine stations, has been ordered to Hamburg, Germany, to study the cholera situation.

Bequests.—By the will of Hannah Burgess, St. Mary's Hospital will receive $300.——By the will of Thomas Woolman, the Frankford Insane Asylum receives $2,000; Red Bank Sanitarium Association, $1,000, and the Children's Country Week Association, $1,000.——By the will of Louisa Baumann each of the following institutions receives $1,000: German Hospital. Orphans' Home of Germantown, and the Philadelphia Home for Incurables.

Personal.—Dr. E. J. Beardsley sailed for Europe on the *Friesland*, September 2.——Dr. Francis D. Patterson has been appointed examining physician of the State Constabulary.——Dr. Joseph Roberts, Camden, N. J., has been appointed skiagrapher in St. Joseph's Hospital, vice Dr. Flynn, resigned.——Dr. John Stanton has been appointed assistant chief of the out-patient nose and throat department of the Children's Hospital.——Dr. J. L. Harkness has been appointed chief of the laryngological department of Jefferson Hospital.

Health Report.—The deaths from all causes during the week aggregated 437, or one less than the number reported the three previous weeks, a coincidence never before known in the health bureau's history. For the same period of last year the deaths numbered 371. There is a decided decrease in contagious diseases, particularly typhoid fever. The principal causes of death were as follows: Typhoid fever, 15; diphtheria, 5; whooping cough, 7; consumption, 41; apoplexy, 20; heart disease, 25; acute respiratory diseases, 29; enteritis (under 2 years), 45; enteritis (over 2 years), 9; Bright's disease, 36; appendicitis, 4; injuries, 13; suicides, 5. There were 117 cases of contagious disease reported, with 20 deaths, as compared with 142 cases and 15 deaths for last week. The deaths from typhoid fever numbered 15, an increase of 5 over those of last week. There were 62 cases reported during the week, as compared with 82 cases the previous week, and 125 three weeks ago.

UTAH.

State Hospital Changes.—Dr. David H. N. Calder has been appointed medical superintendent of the State Mental Hospital, Provo, vice Dr. Milton H. Hardy, removed——Dr. Frederick Clift, Heber, has been appointed assistant medical superintendent of the State Mental Hospital, Provo.

Hospital Notes.—The White Cross Sanitarium and State Emergency Hospital has been established in Salt Lake City, at 253 S.W. Temple St.——A building permit has been issued for a brick addition to the Dr. Groves Latter Day Saints Hospital at Salt Lake City, to cost $10,000.

Personal.—Dr. John S. Gordan, Ogden, has been appointed physician of Weber County, vice Dr. Harry B. Forbes——Dr. Charles F. Wilcox, Salt Lake City, was struck over the eye by a horseshoe thrown by a boy and suffered an extensive scalp wound——Dr. Chauncey M. Benedict, Salt Lake City, has been reappointed assistant surgeon general of the National Guard of Utah.

VERMONT.

Personal.—Dr. Marcello Hutchinson, superintendent of the State Hospital for the Insane, Waterbury, has been seriously ill with nephritis, but is now improving.——Dr. Charles L. Ervin, Newport Center, has been appointed trustee of the State Asylum for the Insane at Waterbury.

Hospital Officers Elected.—At the annual meeting of the St. Alban's Hospital Association the following officers were elected: Vice-president, Dr. Theodore R. Waugh; secretary and clerk, Dr. E. I. Brown, and managers of the institution, Drs. Theodore R. Waugh and Dr. Stephen W. Paige.

Impure Food.—The State Board of Health has been investigating the food products for sale there, making 118 tests. Of 38 samples of maple sugar and syrup, 5 were adulterated: 2 samples of oysters had boric-acid preservatives; 12 out of 15 samples of lemon extract were impure, 3 containing coal-tar dyes; other adulterated products were, vanilla extract, baking powder and ginger champagne.

Dedication of College.—The dedication of the new medical college building of the University of Vermont, Burlington, took place June 27. The building was presented to the Board of Trustees by Dr. Henry C. Tinkham, dean of the medical department and chairman of the building committee. The building was accepted in behalf of the Board of Trustees by Mathew H. Buckham, president of the University. A history of the medical department was then given by Dr. J. H. Woodward, class of 1882, New York City.

VIRGINIA.

Hospital Notes.—Mrs. Thomas F. Ryan will shortly begin the erection of a hospital in Lynchburg, three stories high and fireproof throughout, to cost $100,000——A new story has been added to St. Luke's Hospital, Richmond.——The Dunlop Memorial Hospital, Petersburg, which has just been completed and is now ready for use, was erected by Mrs. Mary Corling Dunlop in memory of her husband, the late David Dunlop—— The new King's Daughter Hospital, Staunton, erected at a cost of $20,000, was dedicated July 1.

Personal.—Dr. Stuart McGuire, Richmond, has been made president of the University College of Medicine, vice Dr. Allison Hodges, resigned——Dr. Robert H. Whitehead of the medical department of the University of North Carolina, Chapel Hill, has been elected professor of anatomy and dean of the University of Virginia Medical Department, Charlottesville—— Dr. Joseph M. Burke, Petersburg, has been appointed general surgeon of the Seaboard Air Line——Dr. Edward L. W. Ferry, Miller's Tavern, was injured in a runaway accident, August 6, sustaining a fracture of the jaw.

GENERAL.

Plague at Panama.—A case of plague which terminated fatally is reported from La Boca.

Cholera in Manila.—Eleven new cases of cholera have been reported from Manila. The total number of cases since the outbreak is reported as forty, with twenty-five deaths.

Quarantine Against Panama.—The president of Nicaragua has issued a proclamation declaring the ports of that country closed to all vessels from Panama because of reports of the presence of bubonic plague in the latter republic.

New York and New England Association of Railway Surgeons.—The fifteenth annual meeting of this association will be held at the Academy of Medicine, New York City, Nov. 17-18, 1905, under the presidency of Dr. G. P. Conn, of Concord, N. H. One-half day of the meeting will be devoted to a symposium on "Injuries to the Head and Spine."

Mississippi Valley Medical Association.—At the next meeting of the Mississippi Valley Medical Association, to be held at Indianapolis, Ind., October 10-12, the annual addresses will be delivered by Dr. Arthur R. Edwards, Chicago, on "Certain Phases of Uremia, Their Diagnosis and Treatment," and by Dr. W. D. Haggard, Nashville, Tenn., on "The Present Status of Surgery of the Stomach."

Pacific Coast Surgeons Meet.—At the third annual meeting of the Pacific Association of Railway Surgeons, San Francisco, August 17, the following officers were elected: President, Dr. Thomas W. Huntington, San Francisco; vice-presidents, Drs. Thomas C. McCleave, Berkeley, Cal., and William O. Spencer, Huntington, Ore.; Secretary, Dr. James P. Dunn, Oakland, Cal., and treasurer, Dr. Frank L. Adams, Oakland.

Seaboard Air Line Surgeons Meet.—Surgeons of the Seaboard Air Line recently met in annual convention at Old Point Comfort, Va., and elected the following officers: President, Dr. Gottlob A. Neuffer, Abbeville, S. C.; vice-presidents, Drs. W. C. Monroe, Sanford, Fla., Gray G. Holladay, Portsmouth, Va., and Jarrett W. Palmer, Ailey, Ga.; and chairman of executive committee, Dr. Southgate Leigh, Norfolk, Va. The 1906 meeting will be held in Savannah, Ga.

American Roentgen Ray Society.—The sixth annual meeting of the American Roentgen Ray Society will be held at the Johns Hopkins Hospital, Baltimore, September 28-30. The Stafford Hotel has been selected as headquarters. The program includes papers by foreign as well as by American workers in this special department of medicine. All regular practitioners are eligible to membership in the society and are invited to attend the scientific sessions and to view the exhibition of apparatus. Further information can be obtained from the secretary, Dr. Russell H. Boggs, Empire Building, Pittsburg, Pa.

Cumberland Valley Medical Association.—At the third annual meeting of this association held at Mount Holly Park, Md., the following officers were elected: President, Major James Evelyn Pilcher, M.D., Carlisle, Pa.; vice-presidents, David F. Unber, Mercersburg, Pa., Augustus C. Maisch, Hagerstown, Md., and George C. Borst, Newville, Pa.; secretary, Dr. John J. Coffman, Scotland, Pa.; assistant secretaries, Drs. Philip R. Koons, Mechanicsburg, Pa., Henry C. Devilbiss, Chambersburg, Pa., and DeWitt C. R. Miller, Mason and Dixon, Pa.; and treasurer, Dr. John J. Koser, Shippensburg, Pa. Major Pilcher presented a memoir on the "Medical Lessons in the Far East," in which he illustrated by the success of the Japanese medical department, the importance of state medicine and of the active participation of physicians in public affairs. At the annual banquet Major Pilcher presided as toastmaster.

Postal War on Medical Pretenders.—According to the Philadelphia *Record*, the postal authorities are attempting to rid Philadelphia of "quack" doctors, fake medical men, etc. On August 28 over a score of persons "who have been advertising in a manner which the authorities consider objectionable were summoned to the postoffice to identify themselves before they could secure mail addressed to them." All the visitors were questioned by the postal inspectors and warned against carrying on their business through the medium of the mails. The position of most of them is such that the federal authorities can take no legal steps, because no overt act has been committed of which the authorities have any knowledge. Several of those summoned had written very plain letters, ostensibly to some woman, but really to the inspectors, offering to perform an illegal operation for a special price; but it is necessary to show that an operation was performed in consequence of the writing of the letter. The empty promise to commit a prohibited act for pay does not constitute a crime. According to the *Record*, publications which have been printing the offending advertisements were also notified by the postal authorities that they must cease publishing them or suffer prosecution.

THE YELLOW FEVER SITUATION.

Louisiana.—The situation among the fishing settlements in Jefferson parish has become very bad.——On the sugar plantations the disease still [illegible] are being modified.——During the w[illegible] cases have been reported: Havelona [illegible] son, 16, 2 deaths; Port Barrow, 2; St. Rose, 19; Amelia, 12 and 1 death; Bayou Bœuf, 9; Houma, 2; Ardoyni, 3; Kenner, 19, 2 deaths; Hanson City, 13, 1 death; St. Bernard, 7; Point La Hoche, 2; Pecan Grove, 8, 1 death; Belmont, 1; Elizabeth, 1, 4 deaths; Donaldsonville, 4; St. Gabriel, 1; Alexandria, 1; Smoke Bend, 2; Shaffer plantation, 30; [illegible]endale, 1; Belle Grove, 6; Terrebonne parish, 2, 1 death; Riverside (to August 31), 134, 5 deaths; Leeville (to September 1), 321, 29 deaths; La Place, 7.——Dr. Milton F. Smith, health officer at Shreveport, writes that only three cases have occurred there, with one death. All the patients came from New Orleans and were held in detention.

New Orleans.—Surgeon White has ordered compulsory fumigation of houses, including those whose occupants are out of the city.——As a step to educate the public and in addition to lectures, the city newspapers have reprinted in full the medical papers recounting the steps in the discovery of mosquito conveyance.——The federal officers on August 22 decided to put a quietus on Dr. Leach and the arsenic fad. It was published that he had, in 1890, urged arsenization for yellow fever, cholera and bubonic plague. Surgeon-General Sternberg's unfavorable report was reprinted.. Further, Surgeon White showed that arsenized persons were then under treatment for yellow fever. This proved to be too much for Dr. Leach, who beat a retreat to Minnesota, bewailing his "unfair treatment." It is estimated that up to August 22 some 7,000,000 arsenic tablets "prepared under the direction of Dr. Reginald Leach, arsenical expert," had been taken by New Orleans people in the last two weeks. Just before he left his supports voted to aid the federal service in all its work, thus closing the arsenic incident.——The Orleans Paris Medical Society has issued and distributed an attractive and practical pamphlet addressed to physicians, trained nurses and others entrusted with the care of yellow fever cases.——New Orleans people who have been away on vacations are now freely returning.——Dr. J. T. Wolff and Dr. L. A. Meroux have the fever.——All the authorities on September 1 joined in signed statements that the crisis was past and the fight won.——On September 2 there were but 29 new cases, with 3 deaths. Total cases to September 3, 2,037; total deaths to September 3, 294; death rate, 14.4 per cent.——Dr. Philip Berge was arrested September 2 for failure to report 2 cases of yellow fever.——Surgeon White has joined with the New Orleans Medical Society in asking that moving day be postponed from September 1 to October 1.

Other States.

Arkansas.—Governor Jefferson Davis annulled the permits and certificates of health issued by the State Board of Health, ordered that no attention be paid to any sort of certificate of health, ordered that no railroad crews cross the boundary line from Louisiana, and refused to permit Dr. Goldberger of the United States Public Health and Marine-Hospital Service to pass by rail over a few miles of Arkansas territory on an errand of mercy to another point in Louisiana. Dr. G. M. D. Cantrell, president; Dr. R. B. Christian, secretary, and Drs. W. H. Miller and W. B. Hughes at once resigned from the State Board of Health.

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> We trust you will be with us, and thanking you for the courtesy of an early reply, we beg to remain,
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Official Carlsruhe Warning Against Irregular Practices.—THE JOURNAL has mentioned from time to time the official notices published by the municipal authorities of Carlsruhe warning the public against certain irregular practitioners and against proprietary medicines, etc., which are advertised in the local press or on the billboards. The list includes a number of American nostrums. The instigator of the warnings is the *Stadrath* or mayor, who is earning the encomiums of all interested in protecting the public health and pocket. He has recently had all the warnings collected and published in a booklet of 148 pages, which is offered for sale by the publishing house of G. Braun, Carlsruhe. The *Deutsche med. Wochft.* suggests that this booklet deserves a place on the table in the waiting room of every physician. It will bear translating into all languages, as many of the nostrums it describes are advertised in all civilized countries.

The Control of Proprietary Remedies.—A serious attempt is being made by the Council of Pharmacy and Chemistry of the American Medical Association to control the various secret remedies which are put before the medical profession in that country. The following particulars of the scheme are taken from a copy of the rules for which we are indebted to the courtesy of a well-known firm of druggists. It appears that in the United States of America there is a rapidly growing sentiment against the increasing legion of secret preparations. THE JOURNAL of the American Medical Association conceived the idea of forming a board of control, to be composed of pharmacists and chemists, which should pass in review all medicinal preparations offered for insertion in the advertising pages of that journal. That idea has been modified by making the functions of the proposed board similar to those of the Committee of Revision of the United States Pharmacopeia. The work is to be taken up where that committee left off, and a description of the unofficial preparations which conform to the required standard will be published in the form of a book to be entitled "New and Unofficial Remedies." In other words, it will form an extra pharmacopeia, giving useful details of reputable preparations. The board of trustees of the American Medical Association has authorized the formation of an advisory board, to be known as the Council of Pharmacy and Chemistry, to carry out the work. The council is composed of men eminent in medicine and pharmacy as writers, teachers and research workers. The Council proposes immediately to examine into the composition of the various medical preparations that are offered to physicians, and are not included in the United States Pharmacopeia or in other standard text-books or formularies. In the rules here given the term "article" is applied to any drug or preparation used in the treatment of disease.

(Here follow the Rules of the Council.)

The manufacturers of legitimate preparations have nothing to fear from this action on the part of the American Medical Association. On the contrary, they are to be congratulated that the Association has undertaken to separate the wheat from the chaff. In this country, medical practitioners are overwhelmed with samples and literature of preparations which may be good, bad or indifferent. The composition is not usually disclosed and the habit is formed of throwing all aside, the good and the bad together. The list of unofficial preparations of known compositions and strength when published by the American Medical Association should prove valuable to the medical profession and a safeguard to the public. Measures of similar character might with advantage be adopted in this country. It should not be difficult to find funds for the purpose, especially if a working arrangement were made with the American Medical Association whereby each country should investigate its own products to avoid covering the same ground twice.

Though the rules adopted by the American Medical Association are good and worthy of imitation, they are not sufficiently comprehensive to nullify entirely the present system which leads to self-drugging. The weak points are not hard to find. Let it be imagined that a practitioner prescribes a preparation which is labeled on the lines laid down in the rules as follows: "A hypnotic and sedative, containing three-quarters of a grain of morphin in 110 minims. Dose 5 to 30 minims." Unless the practitioner initials and dates the prescription whenever he requires it to be repeated there is nothing to prevent the repetition of the prescription dozens and even hundreds of times. Pharmacists should be requested to consider it a breach of etiquette to copy a prescription for a patient or to make it up for any other person. Again, it should be a rule that no proprietary medicine should be delivered to the patient in the original package in order to prevent the purchase of further supplies without a prescription. The excellent rules of the American Medical Association should therefore be supplemented by further rules for the guidance of pharmacists on these points touching the repetition of prescriptions and the transference of medicines from original packages before delivery to the patient. A set of rules of this kind, supplemented by a more complete code of pharmaceutical etiquette, would benefit alike the public and the medical profession and should find a place in the system of medico-pharmaceutical ethics.

Again, it is obvious that another weak point in the proposed scheme is that it will almost of necessity fail to touch the very class of secret or proprietary remedies which are productive of the largest amount of self-drugging—viz., so-called "patent" medicines produced for the express purpose of appealing to the credulity of the multitude. Since the proposed list is rightly intended solely for the use of medical men the failure to secure recognition will hardly be of any material detriment to the sale of such preparations which will still be advertised in the lay journals and reach the public for whom their proprietors cater.—(Editorial, *The Lancet*, Aug. 12, 1905.)

[*The Lancet* is correct in its last paragraph. The patent-medicine evil should be assailed, but the proprietary nostrum must first be eradicated. Before we can proclaim war on patent medicines, with energy and with a clear conscience, it will be necessary for us as physicians to rid ourselves of the proprietary nostrum evil by ceasing to prescribe preparations that are nothing more nor less than patent medicines. Before medical journals can criticize newspapers for carrying patent-medicine advertisements, they must themselves refuse advertisements of similar preparations, even though these be dignified with the name of proprietary medicines. THE JOURNAL of the American Medical Association itself is not yet entirely free from this reproach, but it is freeing itself as rapidly as undesirable contracts expire.—ED.]

Correspondence

The Construction of the Panama Canal, a Sanitary Problem.

ANN ARBOR, MICH., Aug. 31, 1905.

To the Editor:—In view of the fact that yellow fever is prevalent in Panama, and in view of the statement that more than 60 per cent. of the people in the Canal Zone are now infected with malaria, and in view of the report of the presence of the plague on the isthmus, it seems unnecessary to argue that the method followed by this government up to the present time, in the construction of the canal, has not been characterized by wisdom. Please permit me to offer the following statements, which, in a condensed way, represent my views concerning the means that should be adopted in the carrying out of this great enterprise. These suggestions I have hurriedly condensed and will state as follows:

1. The first thing that should be done is to render the Canal Zone a habitable place. That this has not been done, although we have been in possession for more than two years, must be admitted by all.

2. The engineering problem involved in the construction of the Panama canal is of secondary importance compared with the sanitary problem which must be met.

3. The French failed to complete the canal, not because they had not the engineering ability necessary to do it, but because they were wholly unable to cope with the insanitary conditions existing in that locality.

4. In converting the Canal Zone into a habitable location, engineering skill must be employed, but it will be only

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The Construction of the Panama Canal, a Sanitary Problem.

Ann Arbor, Mich., Aug. 31, 1905.

To the Editor:—In view of the fact that yellow fever is prevalent in Panama, and in view of the statement that more than 60 per cent. of the people in the Canal Zone are now infected with malaria, and in view of the report of the presence of the plague on the isthmus, it seems unnecessary to argue that the method followed by this government up to the present time, in the construction of the canal, has not been characterized by wisdom. Please permit me to offer the following statements, which, in a condensed way, represent my views concerning the means that should be adopted in the carrying out of this great enterprise. These suggestions I have hurriedly condensed and will state as follows:

1. The first thing that should be done is to render the Canal Zone a habitable place. That this has not been done, although we have been in possession for more than two years, must be admitted by all.

2. The engineering problem involved in the construction of the Panama canal is of secondary importance compared with the sanitary problem which must be met.

3. The French failed to complete the canal, not because they had not the engineering ability necessary to do it, but because they were wholly unable to cope with the insanitary conditions existing in that locality.

4. In converting the Canal Zone into a habitable location, engineering skill must be employed, but it will be only a

Ernest Pierpont, M.D. Chicago Medical College, 1880, an old resident of the Ojal Valley, Cal., died at his home, Overlook, Nordhoff, August 26, aged 50.

John Van Dermark. M.D. Illinois, 1883, died at his home in Rosendale, N. Y., August 24, from typhoid fever, after an illness of one week, aged 57.

Henry F. Garey, M.D. Washington University School of Medicine, Baltimore, 1876, of Kansas City, Mo., died at Baltimore August 31, from nephritis.

John J. Lawrence, M.D. New York University, New York City, 1861, died at his home near Coakley, N. C., from dropsy, August 21, aged 68.

J. Y. Hicks, M.D. Tulane University of Louisiana, New Orleans, 1852, died at his home in Moulton, Texas, aged 23.

Abroad.

Christopher Heath, F.R.C.S. Death has suddenly removed one of the most prominent of London surgeons and teachers, Mr. Christopher Heath. Born in London in 1835, he was the grandson of Mr. John Heath, a surgeon in the Royal Navy, was educated at King's College School and Hospital, receiving his M.R.C.S. degree in 1856. He served as a surgeon with the Baltic fleet in the Crimean war. In 1856 he was appointed demonstrator of anatomy at Westminster Hospital and in 1862 lecturer on anatomy and assistant surgeon. In 1866 he became assistant surgeon and teacher of operative surgery at University College Hospital, and in 1875 he was made surgeon and professor of surgery. While at the Westminister Hospital he wrote his well-known "Practical Anatomy," which reached a ninth edition in 1902. A year after his appointment to University College Hospital he was awarded the Jacksonian prize for his essay on "The Injuries and Diseases of the Jaws, Including Those of the Antrum with the Treatment by Operation or Otherwise." In 1881 he was elected a member of the Council of the Royal College of Surgeons, and in 1895 president. He was an admirable teacher, being always clear and practical, as many popular works which emanated from his pen show. Among the best known are his "Course of Operative Surgery," and his "Manual of Minor Surgery and Bandaging," which ran into twelve editions. He also edited his standard "Dictionary of Practical Surgery." In 1897 he delivered the Lane Medical Lectures at the Cooper Medical College in San Francisco, which were listened to with great attention, not only by the students, but by hundreds of practitioners from the Pacific coast. A pupil of Sir William Ferguson, Mr. Heath was a bold and successful operator. As an authority on the surgical diseases of the jaws he was foremost. He was a keen controversialist and a hard hitter. He died suddenly at his residence in London, August 8, aged 70.

Queries and Minor Notes

Anonymous Communications will not be noticed. Queries for this column must be accompanied by the writer's name and address, but the request of the writer not to publish name or address will be faithfully observed.

DETERIORATION OF APOMORPHIN HYDROCHLORATE.

Dodge City, Kansas, Aug. 22, 1905.

To the Editor:—Anent your observation on apomorphin, in reply to an inquirer in The Journal of August 19, page 548, I beg to say that H. C. Wood, in the tenth edition of his work on "Therapeutics," merely mentioned the discolorations, as also does H. H. Rusby in his article on the drug in Wood's "Reference Handbook." Gould's "Students' Dictionary" does not mention it, but Lippincott's "Medical Dictionary"—late revision—condemns the use of the discolored material.

Some four years ago I had occasion to use apomorphin in a case of acute alcoholism, and injected the discolored tablets with good results. I stuck the tube in my pocket hypo and had no occasion to use it again till last week, when, on responding to a hurry call, I found a man who had swallowed a half ounce of laudanum, and was already profoundly under the influence. My heart misgave me when I pulled out that old green tube: it was clear that the man could not be made to swallow anything, and that a stomach-tube was a useless piece of furniture. To have gone to the drug store to search for a tube of fresh tablets would have consumed valuable time; so I hurriedly injected 1/6 gr. of the discolored drug into the patient's arm without waiting for any sort of cleansing, and in about three minutes he was giving a lively exhibition of reverse peristalsis of the stomach to the delight of a highly interested audience and doubly to the relief of the attending physician. No untoward symptoms developed.

Since reading your condemnation of the discolored article, I have replaced my green tablets with white ones in a brown tube: although I can not avoid the suspicion, on account of the favorable result above described, that I have allowed myself to be euchred out of my fifteen cents.

W. H. Graves.

PRODUCTION OF SYNTHETIC PROTEIDS.

Nutley, N. J., Aug. 22, 1905.

To the Editor:—Is there, in English, any volume embodying the work of L. v. Fisher and others in the laboratory production of synthetic proteids? Where can I obtain information as to these, their variety and character and methods of production? Haeckel says: "Chemists have hitherto tried in vain to master the chemical structure of these obscure protein compounds," meaning, particularly, the various albumins. Are any of these included with some sugars and urea, etc., as laboratory products?

Joseph Clements.

Answer.—Details concerning the synthetic preparation of proteid-like substances, involving principles and methods discovered by Kossel, Curtius, Fischer and others, are not described in English books on chemistry. The chemistry of proteids, insofar as it is understood to-day, is treated of in Otto Cohnheim's "Chemie der Eiweisskörper," a second edition of which has appeared recently. Unfortunately, this is not translated into English.

TEST FOR URIC ACID.

Houston, Texas, Aug. 26, 1905.

To the Editor:—Please give me a quick and easy method for estimating the percentage of uric acid in urine. W. A. H.

Answer.—A very convenient and fairly exact method is the one in which Ruhemann's uricometer is used. The tube is filled up to certain marks with carbon disulphid, and then with a solution containing iodin 1.5 grams, potassium iodid 1.5 grams and absolute alcohol 15 grams in 185 c.c. of distilled water. On adding a certain amount of urine and shaking, the carbon disulphid will become of a dark brown copper color: with more urine the carbon disulphid will absorb all free iodin and the mixture will look like urine. The adding of urine should be stopped as soon as the carbon disulphid shows only a slight reddish tint, because this will disappear entirely after repeated shakings. The test is finished when the indicator appears snow-white, a sign that all iodin has been neutralized by the urine. After the foam has settled, the proportion of uric acid is read off on the scale.

ACONITIN.

Ashton, S. Dak., Aug. 28, 1905.

To the Editor:—A number of text-books state that aconitin should not be used internally, yet at the same time stating that it has the same physiologic action as aconite. Will you state why it should not be used, if it should not be? Has it the same physiologic action as aconite? Are there reliable preparations for internal use to be had? J. M. Crabb.

Answer.—Aconitin is used internally. It is the most potent of all vegetable alkaloids. In the U. S. Pharmacopeia (8th dec. rev.) the dose is given as 1/400 gr. (0.00015). It has practically the same action as aconite, but must be used cautiously and in minute doses.

State Boards of Registration

COMING EXAMINATIONS.

Massachusetts Board of Registration in Medicine, State House, Boston, September 12-13. Secretary, E. B. Harvey, Boston.

Central District Indian Territory Board of Medical Examiners, South McAlester, October 2. Secretary, W. B. Caldwell, Hugo.

Utah State Board of Medical Examiners, Salt Lake City, October 2. Secretary, R. W. Fisher, Salt Lake City.

Board of Medical Examiners of Arizona, Phoenix, October 2-3. Secretary, A. Martin, Phoenix.

Idaho State Board of Medical Examiners, Boise, October 3. Secretary, J. L. Conant, Jr., Genesee.

Indiana Board of Medical Registration and Examination, State House, Indianapolis, October 3. Secretary, W. T. Gott, Crawfordsville.

Board of Medical Examiners of Montana, The Capitol, Helena, October 3. Secretary, W. C. Riddell, Helena

North Dakota State Medical Examining Board, Grand Forks, October 3. Secretary, H. M. Wheeler, Grand Forks.

Minnesota State Board of Medical Examiners, Old Capitol Building, St. Paul, October 3-5. Secretary, C. J. Ringnell, Minneapolis.

Rhode Island State Board of Health, State House, Providence, October 5-6. Secretary, G. T. Swarts, Providence.

Regular Board of Medical Examiners of Georgia, The Capitol, Atlanta, October 9. Secretary, F. D. Paterson, Cuthbert.

Michigan State Board of Registration in Medicine, Capitol Building, Lansing, October 10. Secretary, B. D. Harison, Sault Ste. Marie.

State Medical Board of the Arkansas Medical Society, Little Rock, October 10. Secretary, J. P. Runyan, Little Rock.

State Board of Medical Registration of Vermont, Y. M. C. A. Hall, Burlington, October 10-12. Secretary, W. S. Naya, Underhill.

Kansas State Board of Medical Registration and Examination, State House, Topeka, October 10-11. Secretary, G. F. Johnston, Lakin.

Board of Medical Supervisors of Washington, D. C., Washington, D. C., October 12. Secretary, W. C. Woodward, Washington, D. C

Board of Medical Examiners of State of Texas, San Antonio, October 17. Secretary, T. T. Jackson, San Antonio.

State Board of Medical Examiners of New Jersey, Trenton, October 17-18. Secretary, E. L. B. Godfrey, Camden.

State Board of Health of Illinois, The Great Northern Hotel, Chicago, October 18. Secretary, J. A. Eagan, Springfield.

Louisiana State Board, New Orleans, October 20-21. Secretary, F. A. Larue, New Orleans.

Arizona July Report.—Dr. Ancil Martin, secretary of the Board of Medical Examiners of Arizona, reports the written examination held at Phoenix, July 4-5, 1905. The number of subjects examined in was 9; total number of questions asked, 90; percentage required to pass, 75. The total number of candidates examined was 8, all of whom passed.

PASSED.

College.	Year Grad.	Per Cent.
Columbus Med. Coll.	(1882)	77.2
University of Michigan	(1904)	88
McGill University	(1904)	77.4
Washington University	(1905)	83
Medico Chirurgical Coll., Philadelphia	(1905)	92
Vanderbilt University	(1899)	75.7
Yale University	(1903)	81
Northwestern University	(1904)	76

The Public Service

Army Changes.

Memorandum of changes of stations and duties of medical officers, U. S. Army, week ending September 2, 1905:

Shook, Jay R., asst.-surgeon, left Fort Des Moines, Iowa, with Troop 'G,' 11th Cavalry, to Terre Haute, Ind., and return.

Billingslea, C. C., asst.-surgeon, reported for temporary duty at Fort D. A. Russell, Wyo., from Fort Riley, Kans.

Siler, Joseph F., asst. surgeon, left Fort Meade, S. Dakota, with 6th Cavalry on field duty.

Bourke, James, asst.-surgeon, granted two months and twenty-eight days' leave of absence when his services can be spared, with permission to go beyond the sea.

Baker, Frank C., asst.-surgeon, ordered, on completion of competition at Sea Girt, N. J., to return to his proper station, Presidio of Monterey, Cal.

Quinton, W. W., asst.-surgeon, left Fort McPherson, Ga., en route to Fort Barrancas, Fla., on detached duty.

Bernheim, J. R., dental surgeon, left San Francisco, Cal., en route to Fort Slocum, N. Y., for duty.

Coffey, A. McD., contract surgeon, left Fort Lawton, Wash., and arrived at Fort Davis, Alaska, for duty.

Byars, C. R., contract surgeon, left Fort Sam Houston, Tex., and arrived at Fort Sill, Okla. Ter., for temporary duty with Provisional Regiment of Field Artillery.

Halliday, Francis A., contract surgeon, relieved from temporary duty at Fort Caswell, N. C., and further duty at Fort McPherson, Ga., and ordered to Fort Fremont, S. C., for duty.

Navy Changes.

Changes in the Medical Corps, U. S. Navy, for the week ending September 2, 1905.

McCormick, A. M. D., surgeon, detached from the *Hartford* and ordered home to wait orders.

Brister, J. M., P. A. surgeon, detached from the *Atlanta* and ordered home to wait orders.

Riggs, R. E., asst.-surgeon, detached from the *Newark* and ordered home to wait orders.

Byrnes, J. C., surgeon, detached from the *Texas* and ordered to the Naval Academy.

Freeman, G. F., P. A. surgeon, detached from the Naval Station, Olongapo, P. I., and ordered to the Naval Station, Cavite, P. I.

Taylor, J. S., P. [illegible] from the *Ohio* and ordered to duty at the Un[illegible]kin, China.

Wickes, G. L., [illegible] from the Naval Station, Cavite, P. I., and [illegible]

Pryor, J. C., surgeon, ordered to the Naval Medical School, Washington, D. C.

Dunn, H. A., P. A. surgeon, detached from the *Terror* and ordered home to wait orders.

Hathaway, G. S., asst.-surgeon, ordered to the Naval Hospital, Washington, D. C.

Geiger, A. J., asst.-surgeon, detached from the *Severn*, granted leave for thirty days, and then to wait orders.

Public Health and Marine-Hospital Service.

List of changes of station and duties of commissioned and non-commissioned officers of the Public Health and Marine-Hospital Service for the seven days ending Aug. 30, 1905:

Sawtelle, H. W., surgeon, to proceed to Richmond, Va., for special temporary duty.

Magruder, G. M., surgeon, granted leave of absence for one month from Aug. 26, 1905, on account of sickness.

Gardner, C. H., P. A. surgeon, to proceed to New Orleans, La., and report to Surgeon J. H. White for special temporary duty.

Foster, M. H., P. A. surgeon, to proceed to Galveston, Texas, and assume temporary command of the service.

Stiles, Ch. W., Chief, Division of Zoology, granted leave of absence for twelve days from Aug. 14, 1905.

Hunt, Reid, Chief, Division of Pharmacology, granted leave of absence for ten days from Aug. 21, 1905.

Hunt, Reid, Chief, Division of Pharmacology, to represent service at meeting of American Pharmaceutical Association at Atlantic City, N. J., September 4-9, 1905.

Richardson, N. D., acting asst.-surgeon, granted leave of absence for seven days from Aug. 17, 1905.

Stevenson, J. W., acting asst.-surgeon, to report at Washington, D. C., for special temporary duty.

Thompson, C. V., acting asst.-surgeon, granted leave of absence for sixteen days from Sept. 2, 1905.

Richardson, S. W., pharmacist, to report at Washington, D. C., for special temporary duty.

McKay, M., pharmacist, relieved from duty at Boston, Mass., and directed to proceed to Cincinnati, Ohio, and report to acting asst.-surgeon in charge for duty and assignment to quarters.

Woods, C. H., pharmacist, on being relieved from duty at Cincinnati, Ohio, to proceed to Evansville, Ind., and report to medical officer in command for duty and assignment to quarters, relieving Pharmacist G. I. Van Ness, Jr.

Carlton, C. G., pharmacist, granted leave of absence for seven days from Aug. 22, 1905.

Van Ness, G. I., pharmacist, leave of absence for thirty days from Aug. 1, 1905, granted Pharmacist Van Ness by Department letter of July 19, 1905, amended so that said leave shall be for nineteen days only.

Van Ness, G. I., Jr., pharmacist, on being relieved from duty at Evansville, Ind., by Pharmacist C. H. Woods, to report at Washington, D. C., for duty.

Health Reports.

The following cases of smallpox, yellow fever, cholera and plague have been reported to the Surgeon-General Public Health and Marine-Hospital Service, during the week ended August 19, 1905:

SMALLPOX—UNITED STATES.

Arkansas: Fort Smith, May 20-June 3, 2 cases.

California: Los Angeles, August 5-12, 5 cases; San Francisco, August 12-19, 2 cases.

District of Columbia: Washington, August 12-19, 2 cases.

Florida: Jacksonville, August 12-19, 1 case.

Illinois: Chicago, August 12-19, 2 cases, 2 deaths.

Louisiana: New Orleans, August 12-19, 1 case, imported.

Massachusetts: Lowell, August 12-19, 1 case.

Ohio: Canton, March 1-April 2, 1 case.

Wisconsin: Appleton, August 11-18, 4 cases; Milwaukee, July 30-August 12, 2 cases.

SMALLPOX—INSULAR.

Philippine Islands: Manila, June 17-24, 1 case.

SMALLPOX—FOREIGN.

Africa: Cape Town, July 8-15, 5 cases.

Brazil: Bahia, July 15-22, 1 death; Rio de Janeiro, July 16-23, 21 cases, 1 death; Rio Grande de Sul, July 11, epidemic.

France: Paris, August 4-11, 17 cases, 7 deaths.

Great Britain: Cardiff, Aug. 6-12, 2 cases; Newcastle-on-Tyne, July 29-August 5, 1 case.

India: Bombay, July 11-25, 1 death; Calcutta, July 15-22, 2 deaths; Karachi, July 15-23, 1 case, 1 death; Madras, July 8-21, 8 deaths.

Mexico: City of Mexico, July 15-August 12, 23 cases, 18 deaths.

Panama: Bocas del Toro, July 22-28, 1 case.

Russia: Odessa, July 30-August 5, 9 cases, 2 deaths; St. Petersburg, July 15-29, 5 cases, 3 deaths.

Spain: Barcelona, July 21-August 10, 7 deaths.

Turkey: Constantinople, July 23-August 6, 7 deaths.

YELLOW FEVER—UNITED STATES.

Louisiana: Ascension Parish, to August 14, 1 case, 1 death; Avoyells Parish, 1 case, 1 death; Caddo Parish, 4 cases; Calcasieu Parish, 3 cases, 2 deaths; East Carroll Parish, 1 case, 1 death; Iberville Parish, 1 case, 1 death; Jefferson Parish, 5 cases, 5 deaths; Lafourche Parish, 3 cases, 1 death; Madison Parish, 2 cases, 1 death; Orleans Parish, July 21-Aug. 17, 1,129 cases, 165 deaths; Plaquemines Parish, to August 14, 11 cases, 2 deaths; Rapides Parish, 2 cases; St. Charles Parish, to August 15, about 18 cases, 3 deaths; St. James Parish, 1 case; St. John Parish, to Aug. 14, about 12 cases, 2 deaths; St. Mary Parish, 48 cases, 3 deaths; Terrebonne Parish, 2 cases, 1 death.

YELLOW FEVER—FOREIGN.

Mississippi: Mississippi City, to August 17, 10 cases.

Brazil: Rio de Janeiro, July 16-22, 20 cases, 7 deaths.

Guatemala: Livingston, July 22-August 5, 4 deaths; Zacapa, August 5, present.

Honduras: Chamelicon, August 10, present; Choloma, present; Puerto Cortez, July 22-28, 2 cases, Aug. 3-10, 1 death.

Mexico: Tierra Blanca, Aug. 6-12, 2 cases, 1 death; Vera Cruz, 6 cases, 3 deaths.

CHOLERA.

India: Bombay, July 11-25, 2 deaths; Calcutta, July 15-22, 14 deaths; Madras, July 7-21, 33 cases.

PLAGUE—INSULAR.

Philippine Islands: Manila, June 17-24, 2 cases, 2 deaths; Cebu, 2 cases, 2 deaths.

PLAGUE—FOREIGN.

China: Hongkong, June 3-17, 47 cases, 47 deaths.

India: Bombay, July 11-25, 84 deaths; Calcutta, July 15-22, 10 deaths; Karachi, July 8-23, 18 cases, 15 deaths.

Society Proceedings

COMING MEETINGS.

Academy of Ophthalmology and Oto-Laryngology, Buffalo, September 14-16.

American Academy of Ophthalmology and Oto-Laryngology, Buffalo, September 14-16.

American Electro-Therapeutic Association, New York City, September 19-21.

American Association of Obstetricians and Gynecologists, New York City, September 19-21.

American Public Health Association, Boston, September 25-29.

Medical Society of the State of Pennsylvania, Scranton, September 26-28.

Association of Military Surgeons of the United States, Detroit, September 26-28.

Wyoming State Medical Society, Cheyenne, September 27-28.

American Roentgen Ray Society, Baltimore, September 28-30.

Mississippi Valley Medical Association, Indianapolis, October 10-12.

New York State Medical Association, New York City, October 16-19.

American Academy of Medicine, Chicago, November 7-8.

American Dermatologic Association, New York City, December 28-30.

Therapeutics

[It is the aim of this department to aid the general practitioner by giving practical prescriptions and, in brief, methods of treatment for the diseases seen especially in every-day practice. Proper inquiries concerning general formulae and outlines of treatment are answered in these columns.]

The Reduction of Fever.

QUININ.

Aside from the hydrotherapeutic measures in the reduction of temperature Shoemaker, in *Med. Bull.*, regards quinin as the most effective agent in reducing temperature and that in periodical fevers, he states, it is a specific. It limits tissue change, checks fermentation, prevents putrefaction and inhibits the activity of infective germs and thus limits the production of heat. He does not advise it given in enormous doses, for in such large doses it is a gastrointestinal irritant and is injurious to Peyer's patches. He, therefore, recommends it in moderate doses as a tonic and as a reducer of temperature. In epidemic influenza it is of decided value. It counteracts the fever, sustains the strength, allays the cough, and is particularly valuable when the disease is complicated by bronchopneumonia. The fever of croupous pneumonia is likewise favorably influenced. In scarlatina and erysipelas this drug is one of the chief reliances.

SALICYLIC ACID.

Salicylic acid is of use in a number of febrile affections and especially in acute inflammatory rheumatism. Its purest form is obtained in oil of gaultheria. According to this author, salicylic acid is inferior to quinin in the reduction of fevers not of rheumatic origin, and in rheumatism it is surpassed by oil of gaultheria and salicin.

As a remedy for colds and rheumatic pains an infusion made from the leaves of the wintergreen is recommended. The pure oil is effective in doses ranging from 2 to 20 minims (.12 to 1.30). It possesses both antiseptic and antipyretic properties and quickly relieves pain of rheumatic origin when given in full doses every two hours in milk or enclosed in capsules. Its physiologic action is the same as that of salicylic acid and its toxic effects are much less than that of the artificial acid.

In scarlatina the author states that the oil of wintergreen forestalls the occurrence of arthritic complications which are liable to develop in this disease. It may be applied locally combined as follows:

℞. Olei gaultheriæ
Olei olivæ, āā........................ʒiv 15|
M. Sig.: Apply locally to the affected joints.

SALICIN.

Salicin, which is a principle akin to the salicylates and derived from the willow and poplar, is better borne by the stomach than either salicylic acid or the oil of gaultheria. It does not depress the heart, but, on the other hand, serves as a tonic. It can be given safely in doses of several drams daily, the usual dose being 10 grains (.65) every two or three hours. It should be given every hour until three or four doses have been given. It is of value in both the acute and chronic forms of rheumatism, also in the treatment of influenza. A combination of salicin and quinin is a good one in such cases. Salicin is also valuable in tuberculosis to subdue the hectic fever and to check the toxic diarrhea. It also improves the appetite and increases the digestive powers. In pelvic inflammations accompanied by febrile reaction, as in cases of salpingitis, oöphorites, metritis and peritonitis, it is valuable. In the rheumatic fevers of children it is especially to be recommended, as it is easily borne by them. It promotes more rapid convalescence and never produces delirium.

ALCOHOL.

Alcohol has some effect in reducing fever by diminishing tissue change and promoting heat radiation. It is not, however, given primarily to reduce temperature, but it is of value when fever is present, in some cases to quiet delirium and to promote sleep. Its administration, therefore, should depend on the condition of the patient. The malt liquors are frequently given during the stage of convalescence from fevers. In hemorrhagic measles or scarlatina, diphtheria and pneumonia, alcohol is demanded, and it is frequently of service in the treatment of erysipelas.

CAMPHOR.

Camphor, like alcohol, stimulates the heart and circulation in low fevers. It diminishes the production of heat and lessens tissue waste. It is of more benefit when given in small doses, as large quantities depress. Its virtue is too often overlooked, so states the author, while there is such a strong tendency at the present time to experiment with new drugs. This drug overcomes restlessness and excitement caused by high temperature. It is of value in typhoid fever and typhoid pneumonia, especially in aged individuals. It is also of value in the eruptive fevers and influenza.

ACONITE.

Aconite reduces fever by its effect on the circulation. It diminishes the action of the heart, decreases the frequency of the pulse rate and lowers blood pressure. It also promotes elimination by the skin and kidneys. It is of value, therefore, in the treatment of sthenic fevers, which not infrequently are seen in robust individuals. In typhoid fever it is of no service. In the eruptive fevers of childhood it produces good effect, also in acute inflammatory conditions, in pleurisy, pneumonia, pericarditis, endocarditis and tonsillitis, by promoting the elimination and reducing the temperature.

VERATRUM VIRIDE.

Veratrum viride allays the overactivity of the heart and reduces the tension of the pulse. It should not be prescribed in large doses, as they cause nausea and vomiting and sometimes are followed by collapse. It is contraindicated in typhoid fever unless violent delirium and a high tensioned pulse is present. In the beginning of the first stage of pneumonia it is very valuable. It may be given in from 10 to 15 minim (.65-1.00) doses of the tincture every two hours to reduce temperature and pulse rate. It is harmful in the second stage of pneumonia.

GELSEMIUM.

Gelsemium is another preparation which lowers the pulse rate and decreases arterial tension. It acts on the ganglia of the heart. This preparation also increases the activity of the skin and reduces fever. It should be given only in fevers of the sthenic type to allay the cerebral excitement, congestion and inflammation. It is sometimes recommended for this purpose in allaying the cerebral excitement, congestion and inflammation present in cerebrospinal meningitis. It is more serviceable in diseases of children. It is recommended by the author in beginning pneumonia and pleurisy and in remittent fever.

ANTIMONY.

Antimony acts by depressing the heart's action and is a diaphoretic. Tartar emetic is of value in acute bronchitis by reducing temperature and promoting secretion by the mucous membrane. It is very valuable in the treatment of tonsillitis and parotiditis. The coaltar products are mentioned by the author only to be condemned as a class of agents which produce grave influences on the heart and circulation in general. They depress the nervous system and in some cases produce collapse, cyanosis, dyspnea, vertigo and vomiting.

Corns.

Brocq, in an abstract in *Med. News*, recommends that the corn be softened at night with a piece of flannel covered with soap and spirits, followed by curetting it with a curette or a knife. Apply daily for six or eight days the following dressing:

℞.	Ext. cannabis ind. alc.	gr. viiss		50
	Acidi salicylici	gr. xv	1	
	Alcoholis	m. xv	1	
	Spts. etheris	ʒss	2	
	Collodii (flexible)	ʒiss	6	

M. Sig.: Apply locally once a day.

After the foregoing dressing has been applied for the required number of times the foot should be bathed in hot water and the corn curetted. Other methods consist in moistening the corn with a concentrated solution of salicylic acid in alcohol, covering it with pulverized salicylic acid and sealing with a piece of cotton. The dressing should be renewed in four or five days, and if inflammation is present the treatment should be stopped. About the eighth day the foot should be soaked in hot water and the corn can then be removed.

The following combination is regarded as valuable in the removal of corns:

℞.	Acidi salicylici	gr. xl	2	65
	Ext. cannabis ind.	gr. v		30
	Collodii flex. q. s. ad	℥i	30	

M. Sig.: To be painted over the corn once or twice daily for several days. Or:

℞.	Ext. cannabis ind.	gr. iii		20
	Acidi salicylici	ʒss	2	
	Olei terebinthinæ	m. xv	1	
	Acidi acetici glacial	m. vi		40
	Cocainæ (alk.)	gr. vi		40
	Collodii q. s. ad	ʒv	20	

M. Sig.: Apply a thin coating over corn every night until it drops off. Or:

℞.	Acidi salicylici	gr. x		65
	Ext. cannabis ind.	gr. iv		25
	Alcoholis			
	Etheris, āā	ʒss	2	
	Collodii	ʒiii	12	

M. Sig.: Apply locally. Or:

℞.	Potass. hydratis	gr. iii		20
	Tinct. iodi	ʒi	4	
	Glycerini	℥ss	15	
	Aquæ destil	℥i	30	

M. Sig.: Apply to the corn morning and night with a camel's hair brush.

Cystitis.

The following combination is recommended in the treatment of cystitis:

℞.	*Salol*	ʒii	8	
	Pulv. acaciæ q. s.			
	Aquæ cinnamomi	℥xii	360	

M. Ft. mistura. Sig.: One tablespoonful four times a day.

A suppository is sometimes necessary to relieve the accompanying pain:

℞.	Pulv. opii	gr. iv		25
	Ext. hyoscyami	gr. vi		40
	Ol. theobromæ q. s.			

M. Ft. sup. No. vi. Sig.: One suppository two or three times a day, if necessary, to relieve the pain.

Medicolegal

Privileged Communications.

Section 3163 of the Code of Civil Procedure of Montana, among other things, provides: "There are particular relations in which it is the policy of the law to encourage confidence and to preserve it inviolate; therefore, a person can not be examined as a witness in the following cases: . . . (4) A licensed physician or surgeon can not, without the consent of his patient, be examined in a civil action as to any information acquired in attending the patient which was necessary to enable him to prescribe or act for the patient." Most of the states in the union, if not all, the Supreme Court of Montana says, in the personal injury case of May vs. Northern Pacific Railway Co., have similar statutory provisions.

In the case before the court the plaintiff on her direct examination merely described her injury, and told of her treatment by two physicians. On cross-examination she admitted that a third physician had also attended her as her physician, and had treated her for the injury complained of; but she did not assume to detail any conversation had with him, or to tell of the character or extent of the treatment which he gave her. The defendant insisted that this physician should have been permitted to testify as to the condition of the plaintiff at the time he attended her as her physician. But the court does not think so.

Of course, says the court, if the patient calls the physician as a witness to testify, he thereby expressly consents to the proceeding, or, if he sits by and fails to object, he tacitly consents that the physician may testify. Furthermore, it has been held that where the patient directly attacks the physician, as by an action for damages for malpractice, he abandons the protection given by the statute, for he thereby challenges the physician to disprove the patient's contention as to the character of his injury or of the physician's treatment. Lane vs. Boicourt, 128 Ind. 420. It has also been held that where two or more physicians are employed at the same time, with respect to information gained at the same consultation, calling one of the physicians as a witness by the patient constitutes a waiver of the statutory prohibition as to the other or others (Morris vs. Railway Co., 148 N. Y. 88), although this doctrine is disputed by respectable authority (Baxter vs. Cedar Rapids, 103 Iowa, 599). Likewise it has been held that, where the patient calls the physician as a witness at one trial, this constitutes a waiver of the privileges as to that physician on a second trial of the same case. McKinney vs. Railroad Co., 104 N. Y. 352. But this doctrine has also been disputed in Burgess vs. Sims Drug Co., 114 Iowa, 275, and Grattan vs. Insurance Co., 92 N. Y. 274.

But so far as this court's investigation discloses, no court of last resort has ever held that the mere fact that the patient testifies generally concerning his condition constitutes a waiver of the privilege granted by the statute. In Marx vs. Railroad Co., 10 N. Y. Supp. 159, the Supreme Court of New York held that, where the patient assumes to tell all that took place between himself and the physician, this constitutes a waiver of the privilege; and in Treanor vs. Railroad Co., 16 N. Y. Supp. 536, decided by the Common Pleas Court of New York City, it was also held that, where the patient testifies without reservation as to his injuries and their effect on him, this likewise constitutes a waiver of the privilege. But these cases were later disapproved, and in effect directly overruled, by the Supreme Court of New York in Fox vs. Turnpike Co., 69 N. Y. Supp. 551, and Dunckle vs. McAllister, 74 N. Y. Supp. 902, and by the Court of Appeals of New York in Morris vs. Railway Co., above cited. In Highfill vs. Railroad Co., 93 Mo. App. 219, it is said that, where a patient goes on the stand and testifies as to what his physician found and said, he thereby waives the privilege under the statute. It may be safely said that the Missouri Appellate Court is now the only court asserting the doctrine announced by it, and even that case can hardly be a precedent in favor of the contention of the defendant here, for this plaintiff did not assume to tell what the third physician mentioned had done for her, or to detail any conversations with him, and her statement that he had been her physician was not a voluntary one, but was brought out on cross-examination.

It is not the inherent incompetency of the evidence that precludes it being given, but it is the fact that the evidence comes from a person who occupies a certain relation of confidence to the patient, by virtue of which the statute says he shall not disclose his information without the consent of the person from whom he gained it. So far as this court is aware, the authorities are uniform in holding against the contention of the defendant in this case. Williams vs. Johnson, 112 Ind. 273; Railroad Co. vs. Shepherd, 30 Ind. App. 193; Warsaw vs. Fisher, 24 Ind. App. 47; Green vs. Nebagamain, 113 Wis. 508; McConnell vs. City of Osage, 80 Iowa, 293; Baxter vs. Cedar Rapids, 103 Iowa, 599; Burgess vs. Sims Drug Co., 114 Iowa, 275; Butler vs. Railway Co., 30 Abb. N. C. 78, affirmed in 143 N. Y. 630; Mellor vs. Railway Co., 105 Mo. 455.

Current Medical Literature

AMERICAN.

Titles marked with an asterisk (*) are abstracted below.

American Medicine, Philadelphia.

August 26.

1 *Three Cases of Tumor of Spinal Cord Operated on with Good Result. J. C. Warren, Boston.
2 *What Action Should Be Taken to Suppress Smallpox? H. M. Bracken, Minneapolis, Minn.
3 *Nature and Cause of Hunger, Appetite and Anorexia. M. I. Knapp, New York.
4 Beriberi. J. L. McCool, Marcus Hook, Pa.
5 *To What Extent is Climate a Negligible Factor in the Treatment of Pulmonary Tuberculosis? W. L. Dunn, Asheville, N. C.
6 *Medical Treatment of Excessive Uric Acid in the Urine. B. Robinson, Chicago.

1. **Tumor of Spinal Cord Successfuly Operated On.**—Warren reports two cases of localized tumors of the spinal cord in which removal completely relieved the symptoms, and a third case in which operation was followed by marked improvement.

2. **Suppression of Smallpox.**—Bracken, in order to make the best report possible to the Conference of State and Provincial Boards of Health of North America on the best means of controlling smallpox, obtained from various public health officials, scientists and practitioners their opinions on this most important question, and uses these opinions as the basis for his arguments in favor of compulsory examination, at least of children, and against the indefinite continuance of quarantine as a means of suppressing smallpox. In conclusion he urges that the conference put itself on record as follows: Believing that all attempts to restrain smallpox by means of quarantine in a community not protected by vaccination will fail; that rigid quarantine in a well-vaccinated community is unnecessary; that attempts to control the spread of smallpox by means of quarantine is unscientific, irrational, unsuccessful and misleading; that in laying down strict rules for the quarantine of smallpox, sanitary authorities are favoring unscientific and illogical methods and are conveying false ideas as to safety, this conference protests against further attempts to control smallpox by means of quarantine and requests the passage of compulsory vaccination laws similar to those of Germany, requiring (1) the compulsory vaccination of infants, (2) revaccination at puberty. The conference should further place itself on record as requesting that steps be taken to secure a safe and efficient vaccine, and that vaccination be carried out by official vaccinators acting under the authority of the various boards of health; also that steps be taken to secure a vaccine the quality and efficiency of which are beyond question. Legislators and the people should be advised as to their responsibilities in suppressing smallpox, and a time should be set for the total abandonment of quarantine as a means of attempting to control this disease.

3. **Nature and Cause of Hunger, Appetite, and Anorexia.**—Knapp says that hunger is a lesser degree of pain, produced by the contraction of the muscularis either of the pylorus or of the entire stomach or of the duodenum, or of the contraction of the muscularis of all these structures. If the contraction is more intense, it is felt as a painful hunger. If the contraction is of a slight degree, it is evanescent. This is the reason hunger passes away after a certain lapse of time, even if no food has been taken; it means simply that the contraction gave way to relaxation. A "good and hearty" appetite should not be encouraged, nor should it be regarded with complaisance. Such an appetite must be considered as pathologic and must invariably be suppressed by the physician, as it is caused by a stronger contraction, hence causing greater irritation of the mucosa, which should not be. Absence of contraction, the inability to contract, relaxation, distension—these being the opposite, the reverse of contraction, result in anorexia.

4. **Beriberi.**—McCool thoroughly reviews the literature and reports four cases which he believes are illustrative of four of the six forms of beriberi.

5. **Climate in Tuberculosis.**—Dunn states that since the dietetic-hygienic regimen may be much more thoroughly and efficiently conducted under certain climatic conditions, climate is a negligible factor only: (1) When the financial status of the patient is such that he cannot live in the health resort under conditions just as good as those obtainable at home, with or without the expenditure of the same amount of money; (2) when the patient has not the moral strength to make a business of getting well; (3) when the disease has become hopelessly advanced.

6. **Medical Treatment of Excessive Uric Acid in Urine.**—Robinson says that the rational treatment of excessive uric acid in the urine consists in the administration of ample fluids at regular intervals and of foods containing elements to produce basic combinations with the uric acid forming urates which are freely soluble. He advises the administration of a flavored 12-grain sodium chlorid tablet. The patient places on the tongue a half-tablet and drinks a glassful of water (better hot) before each meal, and in the middle of the forenoon (10 a. m.), middle of the afternoon (3 p. m.), and at bedtime (9 p. m.. The patient thus drinks three pints of 1/4 to 1/2 normal salt solution daily. This practically renders the urine normal, and acts as ample prophylaxis against the formation of uric acid calculus. If parenchymatous nephritis exists the salt should not be administered, as it excessively stimulates the renal parenchymatous cells. In such cases the water only should be given. An alkaline tablet is also given. It is composed of: Cascara sagrada, 1.6 mg. (1/40 gr.); aloes, .022 gm. (1/3 gr.); sodium bicarbonate, .065 gm. (1 gr.); potassium bicarbonate, .022 gm. (1/3 gr.); magnesium sulphate, .13 gm. (2 gr.). One-sixth to one tablet (or more as required to move the bowels once daily) is placed on the tongue before meals and followed by 236 c.c. (8 oz.) of water (better hot). At 10 a. m., 3 p. m. and bedtime one-sixth to one tablet is placed on the tongue and followed by a glassful of fluid. In the combined treatment the sodium chlorid tablet and alkaline tablet are both placed on the tongue together. This method furnishes alkaline bases (sodium and potassium) to combine with the free uric acid, in the urine, producing perfectly soluble alkaline urates and materially diminishing the free uric acid. The alkaline and sodium chlorid tablets take the place of all so-called mineral waters.

Medical Record, New York.

August 26.

7 *Asthma. S. Kohn, New York.
8 Freedom from Uric Acid and How to Obtain It. A. Haig, London.
9 *Long Island Appendicitis. A. E. Gallant, New York.
10 *Lacerations of the Cervix Uteri. A. H. Gardner, New York.
11 Case of Delayed Menstruation; Flow Established at First Spontaneously. [illegible] atment; Conception. B. P. Hirst and [illegible]
12 *Serum Therapy in [illegible] er, New York.

7. **Asthma.**—Kohn discusses the clinical history of asthma exhaustively. He doubts the universal utility of operative work in the nose, but speaks highly of the value of institutional treatment for asthma and urges the establishment of sanatoria for this purpose.

9. **Long Island Appendicitis.**—Gallant discusses cases treated on Long Island and formulates the following rules for guidance in deciding when to operate: 1. With a history of sudden, sharp abdominal pain, soon followed by nausea and vomiting and fever, appendicitis may be surmised, and if a little later the pain becomes localized or most intense in the right iliac region, with right-sided rigidity, the diagnosis stands confirmed. 2. The "safe" treatment of acute or recurrent appendicitis during the attack is operation within the first forty-eight hours following the primary pain. 3. If toward the close of the second day, in spite of an icebag continuously applied over the appendicular region and free castor-oil evacuation of the bowels, the pain and rigidity, with or without nausea and vomiting, temperature and pulse elevation, continue or return, to delay operation under such conditions can only subject the patient to the danger of rupture, extensive gangrene, general peritonitis, intestinal obstruction, and a fatal issue. 4. In the presence of a mass or of tumefaction delay is dangerous—operate at once. 5. Interval operation is free from danger, requires but seven days in bed, two weeks from business, and gives freedom for life.

10. **Lacerations of Cervix Uteri.**—Gardner sums up his views

on this question as follows: 1. Many ills are the result of unrepaired lacerations of the cervix. 2. The frequency and extent of these tears may, to a certain extent, be lessened by allowing more time for dilatation in the first stage of labor; by a more judicious use of the forceps in time and force; and by the proper use of podalic version. 3. The most frequent cause of subinvolution of the uterus and prolonged convalescence is unrepaired lacerations. 4. In all probability many of the frequently quoted morbid conditions ascribed to lacerations are the result of infection of the lacerated surface rather than the laceration itself. 5. Many cases of severe hemorrhage are due to unrecognized cervical lacerations. 6. Immediate repair in the hands of an able surgeon-obstetrician is the best means of controlling such hemorrhage, and also of preventing infection of the torn surfaces. 7. Primary tracheoplasty is easily and quickly done, but a secondary repair is a difficult and tedious procedure. 8. In case of failure in obtaining union in the primary operation, the condition of the woman is none the worse, while if successful, which is usually the case with skillful surgeons, the patient is spared many of the ills which lacerations of the cervix sooner or later entail.

12. **Serum Therapy in Erysipelas.**—Ayer reports the results obtained in 33 additional cases. He says that the shortening of the average duration of the disease by 2.6 days expresses the value of this form of treatment.

New York Medical Journal.

August 26.

13 Contribution to the Surgery of Perforating Gastric Ulcer. A. B. Mitchell, Belfast, Ireland.
14 *Astigmatism, Cause of Vomiting in School Children. A. Brav, Philadelphia.
15 *End Results in Surgery of the Kidney, Based on a Study of Ninety Cases, with One Hundred and Twenty-three Operations. A. V. Veer, Albany.
16 Preoperative and Postoperative Treatment of Surgical Cases. J. E. Canaday, Paint Creek, W. Va.
17 Tropical Diseases of the Angola Highlands. F. C. Wellman, Benguella, West Africa.
18 Extragenital Chancres. A. L. Wolbarst, New York.
19 The Fly and Tuberculosis. T. J. Mays, Philadelphia.
20 Sterility in Women. Pathologic Affections of the Ovaries and Tubes that Produce It, and Their Treatment. J. R. Goffe, New York.

14. **Astigmatism a Cause of Vomiting in School Children.**—Brav finds that some children, during their school term, have regular attacks of vomiting, the primary cause of which is often obscured. He says that it may be laid down as a rule that vomiting in school children, not preceded by a sensation of fullness, distress in epigastrium, epigastric pain, eructation of gases, regurgitation of fluid, heartburn, fever and chills, is caused by astigmatic errors of refraction which demand correction.

15.—See abstract in The Journal, July 29, 1905, page 346.

Medical News, New York.

August 26.

21 *Appendicostomy and Cecostomy in the Treatment of Chronic Colitis. W. Meyer, New York.
22 Contribution to the Study of Chronic Nicotine Intoxication of the Nervous System. F. Robbins, New York.
23 *Summary of Twenty-five Radical Operations on the Rectum Under Local (Sterile Water) Anesthesia. A. B. Cooke, Nashville, Tenn.
24 The Insane of Canada: Presidential Address. T. J. W. Burgess, Montreal, Canada. (Continued.)
25 Natural and Artificial Protection of Man Against Tuberculosis. F. Figari, Genoa, Italy.
26 Dermoid Cysts of the Mediastinum. R. S. Morris, Ann Arbor, Mich. (Continued.)

21. **Appendicostomy and Cecostomy in Chronic Colitis.**—Since October, 1902, Meyer has made use of appendicostomy for obstinate chronic colitis, amebic as well as ulcerative, in four patients, and of cecostomy in one, a man in whom the appendix seemed of too small caliber to permit of thorough flushing. These five cases nicely demonstrate the great value of colon flushing in the various chronic affections of the large intestine, catarrhal, tuberculous, specific and amebic. Of course, in cases of chronic catarrh due to the presence of multiple papillomata, there is not much benefit to be derived from the treatment. They, further, show the excellence of Weir's idea of utilizing the appendix for this purpose, disproving the fear entertained by many, viz., that irrigation through a small tube would be unsatisfactory. If two quarts of fluid introduced through a tube 14 mm. in circumference, can be made to pass the entire large intestine within ten minutes, this is all that can be expected. Meyer says that in view of the obstinacy of ulcerative colitis in its various forms, and its tendency to recurrence, too much stress can not be laid on the advisability of keeping open the communication with the caput coli for a considerable length of time, and of insisting on a properly selected diet in conjunction with rational internal medication. Both must assist the salubrious effect of colon flushing. Meyer considers appendicostomy the operation of choice in all cases of obstinate, chronic colitis. It is simple, safe and effective, and the same is true of the after-treatment. He gives it the preference over cecostomy in all cases in which the appendix is passable.

23.—See abstract in The Journal, July 8, 1905, page 129.

Boston Medical and Surgical Journal.

August 24.

27 *Empyema of the Frontal Sinus. F. C. Cobb, Boston.
28 *Localization of Chronic Suppurations of the Urinary Tract. A. L. Chute, Boston.
29 Efficacy of Serum Treatment in Streptococcus Puerperal Septicemia. E. B. Young, Boston.
30 What the Suburban Surgeon is Doing in the Abdomen, and How He Does It. C. E. Durant, Haverhill, Mass.

27. **Empyema of Frontal Sinus.**—Caleb discusses the clinical history of this affection, and the methods of operating for its cure. He sums up the advantages and disadvantages of these methods as follows: The Ogsten-Luc operation has for advantage the slight deformity produced. For disadvantage it has the great probability of recurrence. The same is true of Jansen's method. Kuhnt's, Ridell's and Coakley's methods yield less probability of recurrence, as they destroy the sinus, but they produce greater or less facial deformity, Coakley's probably giving the least of the three. To all of these methods there is one great objection—that the ethmoid cells are not sufficiently considered. Killian's operation seems to combine the advantage of sinus obliteration with the removal of the ethmoid cells; but it is hard to judge as yet of its practical results as far as deformity and danger to the eye are concerned.

28. **Localization of Chronic Suppurations of Urinary Tract.**—Chute emphasizes careful location of chronic urinary suppurations as an essential for accurate treatment. He has found the conclusions drawn from the glass tests, as applied to suppurations of the urethra, often misleading, while those drawn from the irrigation test are more accurate. Without cystoscopic examination, it is at times almost impossible to differentiate chronic suppurations of the bladder from those of the kidney. Before operating on a suppurative lesion of the kidney it is essential to verify the diagnosis as to which kidney is involved, either by seeing turbid urine issuing from the corresponding ureteric orifice or by ureteral catheterization. Reliance on symptoms alone, even when these seem to leave no doubt, may lead to serious error.

St. Louis Medical Review.

August 19.

31 *Prophylaxis and Treatment of Yellow Fever. F. Forchheimer, Cincinnati, Ohio.
32 *Malarial Origin and Propagation of Yellow Fever. W. H. Ford, St. Louis.

31. **Prophylaxis and Treatment of Yellow Fever.**—This article forms in substance the chapter on yellow fever in Forchheimer's text-book on practice. It offers nothing new.

32. **Malarial Origin and Propagation of Yellow Fever.**—Ford discusses the yellow fever situation in New Orleans; the insalubrity of that city; the inadequacy of the pure quarantinist and of the pure mosquito doctrine; the doctrine that yellow fever is a malignant grade of malaria, which he says is good in spite of its being old, and the local causes of yellow fever. The article is continued.

Lancet-Clinic, Cincinnati, Ohio.

August 26.

33 Adenoids, Their Etiology and Symptoms. B. L. W. Floyd, Evansville, Ind.
34 Education and Hygiene of the Nervous System. H. H. Hoppe, Cincinnati.
35 The Decision to Operate. A. M. Cartledge, Louisville. Ky.

Medicine, Detroit, Mich.

August.

36 *New Technic for the Determination of the Secreting and Evacuating Functions of the Stomach. F. A. McGrew, Laporte, Ind.

37 Controversy Concerning the Use of Cantharides Internally. Historical Sketch. T. L. Coley, Philadelphia.
38 Treatment of Hemorrhoids. C. F. Martin, Philadelphia.
39 *Diagnosis of Ureteral Stones. M. L. Harris, Chicago.
40 Problem of Preventing Tuberculosis. J. McFarland, Philadelphia.
41 *New Clinical Phenomena. A. Abrams, San Francisco.
42 *Celluloid Corset—Consideration of Its Usefulness and the Technic of Manufacture. H. W. Jones, St. Louis.

36. **Determination of Secreting and Evacuating Functions of the Stomach.**—McGrew describes his method as follows: In the morning, fasting, the patient is given a test meal consisting of 60 grams of biscuit and 240 c.c. of a solution made up of 30 c.c. of the iron indicator and 210 c.c. distilled water. For practical purposes nine biscuits and an eight-ounce bottle filled to the neck, putting in first the 30 c.c. iron solution and adding distilled water, will afford a ready means of dosage and be surprisingly accurate. One hour after its ingestion the test meal is withdrawn, following the Mathieu-Rémond technic. To dilute the stomach contents, pour into the stomach, through the tube, 200 c.c. of distilled water. The patient then mixes the water and stomach contents thoroughly by active abdominal and diaphragmatic movements, which should be continued about two minutes, after which period the diluted specimen may be withdrawn, the tube having remained meanwhile *in situ*. In order to make the calculations it is necessary to know: 1, the quantity of the undiluted specimen; 2, the acidity of the undiluted specimen; 3, the acidity of the diluted specimen; 4, the quantity of iron which remained in the stomach into a graduate the first point is settled without more ado. Set the diluted specimen to filter. Thoroughly and vigorously stir the undiluted specimen with glass rod, after which 20 c.c. should be measured from it into an evaporating dish, and the remainder set to filter. To the 20 c.c. add 8 to 10 drops pure hydrochloric acid and 8 to 10 drops pure nitric acid, and boil the whole for several moments until the excess of nitric acid has been entirely driven off. Then add enough distilled water to bring the amount again to 20 c.c. and filter. To 10 c.c. of the filtrate add 5 c.c. of a 5 per cent. solution of ammonium sulphocyanid. Compare the color of this mixture with that of a standard solution composed of a 1/10 dilution of the mother iron solution, 10 c.c. of which (after the iron has been reduced to the chlorid by adding three or four drops of pure HCl and boiling until clear) are treated with 5 c.c. of the same 5 per cent. ammonium sulphocyanid solution. This is the ordinary colorimetric process. For example: Comparing the filtrate mixture and the standard solution, it appears that the former is a lighter shade, hence contains less iron. Add, therefore, mother solution of iron (reduced as above), drop by drop, reversing the tube back and forth after each to thoroughly mix the solutions, until the colors in the two tubes exactly correspond. Then, taking the lower level of the discus, calculate the amount of iron added. Suppose the tube to have contained 10 c.c. filtrate to which 5 c.c. ammonium sulphocyanid solution has been added, and the tube shows that 6 c.c. mother iron solution has been added to bring the color up to the standard. The 6 c.c. mother iron solution contains 6 mg. iron, but the same quantity of the standard solution contains 1 mg. iron. Therefore, the 10 c.c. filtrate contains 4 mg. iron. It remains to determine the total stomach contents, when the quantity of test meal remnant may be easily calculated. Using phenolphthalein as an indicator, ascertain the acidity of the diluted and the undiluted specimens respectively. Then calculate the total stomach contents by multiplying the acidity of the diluted specimen (A') by the quantity of water introduced (Q), and dividing the result by the acidity of the undiluted (A) minus that of the diluted specimen (A'). Suppose the total stomach contents are found to have been 160 c.c. It has been previously determined that each 10 c.c. contain .4 mg. iron; but each 1 mg. is equivalent to 10 c.c. of the original test meal. Therefore, 64 c.c. of the original test meal remained within the stomach and 236 c.c., or 78 per cent., had been evacuated. The evacuatory percentage is, therefore, 78. The volume of the gastric juice is the total stomach contents, 160 c.c., less the volume of the test meal remnant, 64 c.c., or 96 c.c. This is 1.5 times the volume of the test meal remnant. The secretory percentage, therefore, is 150.

39. **Diagnosis of Ureteral Stones.**—According to Harris, a diagnosis of ureteral stones based on the symptomatology can never be more than presumptive, and previous to the advent of the Roentgen ray and the ureteral catheter, a diagnosis of ureteral stone in any portion of the ureter, except the lower end, was seldom made, except at operation. There may be other bodies in the pelvis capable of casting shadows which from appearances alone can not be distinguished from shadows cast by ureteral stones. Hence, in some of these cases a correct diagnosis can be made only by the use of the ureteral bougie.

41. **New Clinical Phenomena.**—Chromo-diagnosis is a word coined by Abrams to describe a method of examination which is specially applicable in the early detection of distended cutaneous veins. One may use colored glass, or, better still, sheets of gelatin of various colors, purchasable from any dealer in magic lanterns. For convenience the sheets may be mounted in cardboard frames. The patient faces the light, while the observer faces the patient. It will be found by looking through either magenta or red-colored gelatin, that the veins are brought into special prominence, and that many veins not evident to the unaided eye can be detected by the colors mentioned. Yellow gelatin will aid in the detection of the diaphragmatic excursions, although to a degree less evident than by painting the skin over the cutaneous arc described by the excursions of the diaphragm with an alcoholic solution of gamboge. Green causes red cutaneous areas to appear black like silhouettes, whereas yellow intensifies the color of erythematous patches. Violet intensifies the most insignificant erythematous area. Blue intensifies brown spots. Violet causes yellow skin lesions to assume a salmon-pink color. The use of the foregoing colors refers to the effects obtained in daylight. Icteric coloration is not demonstrable by gaslight, but when a violet gelatin sheet is employed yellow is seen as a dark yellow. Let the patient rest in the recumbent posture with head nearest to the window, so that the light falls on the exposed chest from behind. The observer stands at the side of the patient, holding in his hand a red gelatin sheet in such a way that the light filtering through the sheet falls on the chest. In a thin subject, especially during forced inspiration, and with the sheet properly adjusted, the chest presents a skeletal appearance and the intercostal spaces are clearly differentiated from the ribs. In the examination of several cases of pneumothorax and hydrothorax the foregoing differentiation was found to be less pronounced or absent, and for this reason chromo-diagnosis may serve as an aid in the diagnosis of the affections mentioned.

42. **Celluloid Corset.**—The method of making the corset employed by Jones consists in pouring a plaster form of the body or part in question, smoothing and finishing this form or model, applying undershirts one after another on this form, and painting each one of these with the celluloid solution, until the desired thickness has been reached. A plaster cast of the trunk is first taken. This is filled with liquid plaster made just thick enough to pour with some difficulty. The cast is usually set first on a box, over a hole, which has been cut through the top, just large enough to admit a heavy stick, which is used to support the form. The object in having the central support larger at one end than at the other is twofold—to save as much plaster as possible in pouring, and to allow the support to be slightly withdrawn an hour or so after the plaster becomes hard. This can be done by resting the plaster form on some object and tapping the end of the support with a hammer until it is driven out a few inches. This will be more easily accomplished if the bar be greased previous to pouring. If this procedure be not gone through with, the water which remains in the plaster form will be absorbed by the wood, and in a few hours the swelling which takes place will break the form. If a bar of iron or piping be used in place of wood there is no danger of the form cracking, but in such case the bar must remain in the plaster and can not be used again without destroying the form. After the form has been poured twenty-four hours the cast can be stripped off, and this will be more easily accomplished if the inner side has been previously coated with vaselin. The form

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37 Controversy Concerning the Use of Cantharides Internally. Historical Sketch. T. L. Coley, Philadelphia.
38 Treatment of Hemorrhoids. C. F. Martin, Philadelphia.
39 *Diagnosis of Ureteral Stones. M. L. Harris, Chicago.
40 Problem of Preventing Tuberculosis. J. McFarland, Philadelphia.
41 *New Clinical Phenomena. A. Abrams, San Francisco.
42 *Celluloid Corset—Consideration of Its Usefulness and the Technic of Manufacture. H. W. Jones, St. Louis.

36. **Determination of Secreting and Evacuating Functions of the Stomach.**—McGrew describes his method as follows: In the morning, fasting, the patient is given a test meal consisting of 60 grams of biscuit and 240 c.c. of a solution made up of 30 c.c. of the iron indicator and 210 c.c. distilled water. For practical purposes nine biscuits and an eight-ounce bottle filled to the neck, putting in first the 30 c.c. iron solution and adding distilled water, will afford a ready means of dosage and be surprisingly accurate. One hour after its ingestion the test meal is withdrawn, following the Mathieu-Rémond technic. To dilute the stomach contents, pour into the stomach, through the tube, 200 c.c. of distilled water. The patient then mixes the water and stomach contents thoroughly by active abdominal and diaphragmatic movements, which should be continued about two minutes, after which period the diluted specimen may be withdrawn, the tube having remained meanwhile *in situ*. In order to make the calculations it is necessary to know: 1, the quantity of the undiluted specimen; 2, the acidity of the undiluted specimen; 3, the acidity of the diluted specimen; 4, the quantity of iron which remained in the stomach into a graduate the first point is settled without more ado. Set the diluted specimen to filter. Thoroughly and vigorously stir the undiluted specimen with glass rod, after which 20 c.c. should be measured from it into an evaporating dish, and the remainder set to filter. To the 20 c.c. add 8 to 10 drops pure hydrochloric acid and 8 to 10 drops pure nitric acid, and boil the whole for several moments until the excess of nitric acid has been entirely driven off. Then add enough distilled water to bring the amount again to 20 c.c. and filter. To 10 c.c. of the filtrate add 5 c.c. of a 5 per cent. solution of ammonium sulphocyanid. Compare the color of this mixture with that of a standard solution composed of a 1/10 dilution of the mother iron solution, 10 c.c. of which (after the iron has been reduced to the chlorid by adding three or four drops of pure HCl and boiling until clear) are treated with 5 c.c. of the same 5 per cent. ammonium sulphocyanid solution. This is the ordinary colorimetric process. For example: Comparing the filtrate mixture and the standard solution, it appears that the former is a lighter shade, hence contains less iron. Add, therefore, mother solution of iron (reduced as above), drop by drop, reversing the tube back and forth after each to thoroughly mix the solutions, until the colors in the two tubes exactly correspond. Then, taking the lower level of the discus, calculate the amount of iron added. Suppose the tube to have contained 10 c.c. filtrate to which 5 c.c. ammonium sulphocyanid solution has been added, and the tube shows that 6 c.c. mother iron solution has been added to bring the color up to the standard. The 6 c.c. mother iron solution contains 6 mg. iron, but the same quantity of the standard solution contains 1 mg. iron. Therefore, the 10 c.c. filtrate contains 4 mg. iron. It remains to determine the total stomach contents, when the quantity of test meal remnant may be easily calculated. Using phenolphthalein as an indicator, ascertain the acidity of the diluted and the undiluted specimens respectively. Then calculate the total stomach contents by multiplying the acidity of the diluted specimen (A') by the quantity of water introduced (Q), and dividing the result by the acidity of the undiluted (A) minus that of the diluted specimen (A'). Suppose the total stomach contents are found to have been 160 c.c. It has been previously determined that each 10 c.c. contain .4 mg. iron; but each 1 mg. is equivalent to 10 c.c. of the original test meal. Therefore, 64 c.c. of the original test meal remained within the stomach and 236 c.c., or 78 per cent., had been evacuated. The evacuatory percentage is, therefore, 78. The volume of the gastric juice is the total stomach contents, 160 c.c., less the volume of the test meal remnant, 64 c.c., or [illegible] c.c. This is 1.5 times the volume of the test meal remnant. The secretory percentage, therefore, is 150.

39. **Diagnosis of Ureteral Stones.**—According to Harris, a diagnosis of ureteral stones based on the symptomatology can never be more than presumptive, and previous to the advent of the Roentgen ray and the ureteral catheter, a diagnosis of ureteral stone in any portion of the ureter, except the lower end, was seldom made, except at operation. There may be other bodies in the pelvis capable of casting shadows which from appearances alone can not be distinguished from shadows cast by ureteral stones. Hence, in some of these cases a correct diagnosis can be made only by the use of the ureteral bougie.

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greater precautions should be observed. He does not consider Finsen-light applications of any value in treating laryngeal lesions. Only the most powerful lamps need be tried, and such exposures are of value only in lessening or retarding a skin reaction from the x-ray.

51. **Unusual Size of Appendix.**—The appendix removed by Spencer from one patient, aged 22, measured one inch in length and resembled a small grub worm. The appendix removed from another patient measured eight inches in length and was coiled on itself deep in the pelvis. The third specimen, removed by Dr. E. E. Montgomery, measured five and one-half inches in length and four and three-quarter inches in its larger circumference. It was not opened, but probably contained fluid.

St. Paul Medical Journal.

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52 *Need of a More Rational Therapy. J. W. Bell, Minneapolis.
53 *Case of Renal Decapsulation for Chronic Bright's Disease. L. F. Schmauss, Mankato, Minn.
54 Sanatorial Care of Tuberculosis. H. L. Taylor, St. Paul.
55 *Accurate Determination of Errors of Refraction, Without Cycloplegia by Means of Astigmatic Charts. C. N. Spratt, Minneapolis.
56 Best Form of Incision in the Extraction of Cataract. C. Williams, St. Paul.
57 Compound Fractures. E. A. Hensel, Alexandria, Minn.

52. **Rational Therapy.**—Bell calls attention to the fact that while preventive medicine is steadily moving onward, winning victories on every hand, therapeutics has for years occupied, and still occupies, an unenviable position, and that this is especially true of drug treatment. He states that therapy is the one weak link in medicine. He reviews the treatment of disease during the last three decades and discusses the relation of physicians to proprietary medicines. The following reasons, he thinks, are responsible for the present state of affairs: 1. Insufficient and impractical instruction in this branch of medicine. 2. The unfortunate tendency in medical schools to devote all energy to the investigation, detection and prevention of disease, to the exclusion of rational therapy. 3. The delusion of considering drugs the only agents for combating disease, thus seriously minimizing the beneficial effects of modern therapy. 4. The willingness of a considerable part of the profession to prescribe anything and everything thrust on the market, regardless of composition or merit. 5. The worse than evil influence of the so-called therapeutic nihilists in the ranks of the profession. Bell reviews the various means of remedying this state of affairs and refers to the work of the Council on Pharmacy and Chemistry in the following terms:

> The important work undertaken by the Council on Pharmacy and Chemistry of the American Medical Association, will doubtless prove exceedingly helpful and beneficial to the entire profession, [illegible] the indifferent prescriber, ready and willi[illegible] and everything, regardless of merit. The [illegible] l Chemistry, composed of able and experienced pharmacists and chemists, proposes to examine into the composition and the status of the various medical preparations offered to physicians, which are not included in the United States Pharmacopeia or in other standard text-books. These will include the synthetic chemical compounds, as well as the so-called proprietaries and pharmaceutical specialties put out under trademarked names. Preparations which conform to the standard established by the Council will be incorporated in "New and Nonofficial Remedies," a book to be published by THE JOURNAL of the American Medical Association. This distinguished body of impartial experts should receive the hearty co-operation of all honorable manufacturing pharmacists and chemists, and of the entire medical profession, in making this important work in the highest degree successful. Let us hope that this important work will be fearlessly pursued, in order that reliable results may follow.

He says that with the new and expurgated pharmocopeia and the valuable aid of the Council on Pharmacy and Chemistry, with the growing feeling in the profession in favor of a rational therapy, we may hope to see the weak link in medicine, therapeutics, so strengthened in the near future as to commend itself alike to the public and to the skeptic within the profession. He also refers at some length to the need of medical education and of uniform medical laws.

53. **Renal Decapsulation.**—After careful study of the literature and observations in a personal case, Schmauss concludes that the Edebohls operation is deserving of further trial, and that we are not only justified in recommending it in suitable cases, after the various therapeutic measures have been sufficiently tried and found wanting, but that it is our duty to do so. This operation, like any other, has not only its indications, limitations and contraindications, as already pointed out, but also its difficulties—(a) unusually small space between last rib and ilium, either due to a short waist, or great length and obliquity of the twelfth rib; (b) undue mobility of the kidney, so that it may be difficult to locate it; (c) perinephritic adhesions or high locations up under the ribs—especially when enlarged, as in his case; (d) firm attachment of the capsule proper in some cases of interstitial nephritis. Certain precautions must be observed to insure the best results: 1, The patient should be carefully prepared for the operation; 2, the development of shock and anuria should be counteracted by appropriate measures; 3, the ilio-hypogastric and ilio-inguinal nerves are to be preserved; 4, undue trauma to the kidney proper and the surrounding structures should be avoided; 5, in replacing the kidney care must be exercised to avoid twisting the pedicle. Much has been said about posturing the patient to facilitate delivery of the kidney; this will increase the working space and help to bring up a loose kidney, but will not influence a normally situated kidney up under the ribs. On the contrary, it has occurred to Schmauss that a pillow or roll might increase the difficulty. Grasping the fatty capsule with a number of small forceps, and thus drawing out the organ, has been advised, but this is only possible if the kidney is movable. Schmauss makes an oblique incision parallel with the twelfth rib, and, if necessary, resecting the latter. Thus retraction can be exerted upward and thereby the kidney rendered more accessible and more room obtained for the hand. In this way considerable time is saved, the fat is disturbed less, and the kidney is spared undue trauma—through handling, pulling, tearing, etc.

55. **Determination of Errors of Refraction.**—Spratt recorded the comparative results obtained with the use of charts without cycloplegia and again of the same eye after instillation of homatropin, 2 per cent., every ten minutes, for a period of one and one-half hours. The patients, all of whom were adults except six, were selected only with reference to their intelligence. In 95 per cent. of cases the astigmatism determined by the use of charts and fogging, but without cycloplegia, was within .25 D. of that found after the use of homatropin. This includes 95 (75 per cent.), of a total of 126 eyes in which there was no difference in the amount. In 4 cases there was an apparent error of .37 D. and in one case an error of .50 D. No eye in the above series would have been given too strong a concave glass if the cycloplegic had been omitted. In two-thirds of the eyes the total myopia corresponded exactly with that found under a cycloplegic. The remaining one-third would have been under-corrected from .12 D. to .37 D. Several cases showing from —.3 D. to —.7 D. of myopia are included in the above. As would be expected, there was less uniformity in results obtained in the eyes showing hypermetropia. Fourteen cases showed less than .50 D. and in 35 eyes (or 42 per cent.), the total hypermetropia was correctly determined without cycloplegia. Spratt concludes his paper as follows: With intelligent adults, subjective methods of refracting are preferable to objective methods. The comparison of two lines at right angles, these corresponding to the axis of maximum and minimum refraction of the dioptric system of the eye, is a more accurate method of determining errors of refraction than by the use of test letters. Astigmatic charts, as devised by Verhoeff, are preferable to the single line charts, as the contrast produced by the cross lines enables one to estimate more accurately any difference in distinctiveness in the test lines corresponding to meridians of maximum and minimum refraction. In practically all cases the astigmatism and myopia can be as accurately determined without as with cycloplegia. A large proportion of cases of hypermetropia can be satisfactorily refracted without the use of cycloplegia.

Journal of Infectious Diseases, Chicago.

May.

58 *Report of Committee on Standard Methods of Water Analysis to the Laboratory Section of the American Public Health Association.
59 Concerning Tests for B. Coli Communis in Water. G. W. Fuller, New York, and C. E. Ferguson, Indianapolis, Ind.
60 Characteristics of Colon Bacilli and the Value of the Presumptive Test. G. Van E. Stoughton, New York.
61 Chemical Phases of a Water-Softening Problem. A. E. Kimberly, Columbus, Ohio.

62 Typhoid-like Bacilli in the Water Supply of Fredericton, N. B. F. C. Harrison.
63 *Persistence of Agglutinability in Typhoid Bacilli in Water. E. O. Jordan, Chicago.
64 Chemical and Bacterial Composition of the Sewage Discharged into Boston Harbor from the South Metropolitan District. C. E. A. Winslow and E. B. Phelps.
66 Number of Bacteria in Sewage and Sewage Effluents Determined by Planting on Different Media and by a New Method of Direct Microscopic Enumeration. C. E. A. Winslow, Boston.
67 Mode of Action of the Contact Filter in Sewage Purification. E. B. Phelps and F. W. Farrell, Boston.
68 Determination of the Organic Nitrogen in Sewage by the Kjeldahl Process. E. B. Phelps, Boston.
69 Tests of a Method for the Direct Microscopic Enumeration of Bacteria. C. E. A. Winslow and G. E. Willcomb. Boston.
70 Report of Committee on Antitoxic and Immunizing Sera.
71 Importance of the Paradysentery Bacilli. W. H. Park, New York.
72 Occurrence of Bacterium Pneumoniæ in the Saliva of Healthy Individuals. W. D. Frost, C. B. Divine and C. W. Reineking, Madison, Wis.
73 *Laboratory Methods and Devices. F. F. Wesbrook, Minneapolis.
74 *Improvement in the Technic of the Indol Test. J. McFarland and J. Hamilton, Philadelphia.
75 Copper Sulphate as a Germicide. G. A. Johnson and W. R. [illegible]
76 [illegible] e Body of the Mosquito [illegible] o, Havana, Cuba.
77 * [illegible] f Gas in Cans of Condensed [illegible] N. Y.

58 and 63.—See abstracts in The Journal, Feb. 4, 1905, page 413.

73. Laboratory Methods and Devices.—Wesbrook describes the following apparatus: For counting colonies in Petri dishes; stands for museum exhibition of permanent fixed cultures of bacteria; complete and rapid anerobiosis; bimetallic thermo-regulator with special arrangement for easy cleaning and adjusting; devices for displaying and labeling pathologic specimens; agar hanging drop; devices for staining a large series of microscopic culture perforations on cover slips or on slides; method of preparing rapidly a serum for diphtheria diagnosis which will yield a medium of constant quality; a modified Drigalski-Conradi crystal violet medium; tests of embalming fluids; field methods in the bacteriology of water, and filing methods for water data.

74 and 77.—See abstracts in The Journal, Feb. 4, 1905, page 413.

Ophthalmic Record, Chicago.

July.

78 Melanoma of Choroid. Report of One Case of This Character and of Pigmented Sarcoma of the Choroid Early in Its Development. G. E. de Schweinitz and E. A. Shumway, Philadelphia.
79 Cystic Sarcoma of Orbit: Extirpation: Death. H. F. Hansell, Philadelphia.
80 Recurrent Iritis. H. Woods, Baltimore, Md.
81 Exenteration Knife-Spatula. C. H. Beard, Chicago.

Kansas City Medical Index-Lancet.

July.

82 Mesenteric Cystoma. F. T. Van Eman, Kansas City, Mo.
83 Intussusception. C. E. Fulton, Springfield, Mo.
84 Case of Acute Inversion and Prolapse of the Uterus. B. L. Eastman, Kansas City, Mo.
85 Catarrhal Condition of the Liver and Ducts Simulating Gallstones. H. S. Hill, Springfield, Mo.
86 Physiology of Saline Cathartics. G. W. Robinson, Kansas City, Mo.
87 Remarks on Gallstones. D. W. Howell, Havana, Kan.
88 Successful Use of Adrenalin Chlorid Solution in Treatment of Appendicitis. S. J. Hampshire, Overbrook, Kan.

Medical Examiner and Practitioner, New York.

July.

89 Medical Examinations for Life Insurance. S. M. Spaulding, Los Angeles, Cal.
90 Adjusting Accident and Health Claims. C. H. Harbaugh, Philadelphia.
91 Infection in Transportation. H. M. Bracken, Minneapolis, Minn.

Providence Medical Journal.

July.

92 Physician and the Community. W. H. P. Faunce.
93 Chronic Purulent Otitis Media with Meningitis, Epidural Abscess and Sinus Thrombosis. G. W. Van Benschoten, Providence, R. I.
94 Treatment of Inoperable Malignant Growths with Coley's Toxins. William E. Wilson, Pawtucket, R. I.
95 State and Diphtheria. G. T. Swarts, Providence.

Journal Medical Society of New Jersey, Newark.

July.

96 Proof of Existence of Amblyopia Ex Anopsia in Strabismus. W. B. Johnson, Paterson.
97 Diagnosi [illegible] the Appendix Lies in the Pelvis. [illegible]
98 Practica [illegible] H. Markley, Camden.
99 Diet in [illegible] umont.
100 Bacteriology of Epidemic Cerebrospinal Meningitis. J. T. Hanan, Montclair.
101 Dangers of Infected Milk. R. C. Newton, Montclair.

Nashville Journal of Medicine and Surgery.

July.

102 Two Cases in which Foreign Bodies Were Swallowed, and After Producing a Remarkable Set of Symptoms, Were Extracted from the Rectum. C. S. Briggs, Nashville, Tenn.

Denver Medical Times.

July.

103 Toxic Amblyopia. I. W. Snow, Salt Lake City, Utah.
104 Congenital Dislocation of the Hip. S. C. Baldwin, Salt Lake City, Utah.
105 Treatment of Asthma. R. Levy, Denver.
106 Normal Obstetrics: Physiology of the Puerperium. T. M. Burns, Denver.

Journal of the Kansas Medical Society, Kansas City, Kan.

July.

107 Skin Therapeutics. H. Wilkinson, Kansas City, Kan.
108 Case of Absence of the Uterus. C. P. Grover, St. Joseph, Kan.
109 Use of Paraffin in the Correction of Deformities of the Nose. Hal Foster, Kansas City, Mo.
110 Case of Detached Retina. G. W. Maser, Parsons, Kan.
111 What Every Doctor Ought to Know About Eyes. J. R. Scott, Garnett.
112 Eclampsia. M. A. Finley, Cherryvale.

St. Louis Courier of Medicine.

July.

113 Baby Incubators on the "Pike." J. Zahorsky, St. Louis.
114 Two Cases of Penetrating Gunshot Wounds of the Abdomen and One of Gallstone Disease. J. Y. Brown, St. Louis.
115 Multiple Aneurism of the Aorta. W. N. Horton, St. Louis.
116 Huntington's Chorea. G. H. Cottral, St. Louis.
117 Specimen of Multiple Sarcoma of the Spinal Column. M. A. Bliss, St. Louis.
118 Delicate Test for Albumin in Urine. A. N. Ravold, St. Louis.

Archives of Physiological Therapy, Boston.

July.

119 Mechanical Vibration and Stimulation. J. H. Burch, Baldwinsville, N. Y.
120 Diagnosis of the Size, Form, Position and Motility of Stomach and Bowel by Means of X-Ray. G. E. Pfahler, Philadelphia.
121 Physicotherapy of Neurasthenia. J. A. Riviere, Paris, France.

Journal of Medicine and Science, Portland, Maine.

July.

122 Cholecystitis: Its Etiology and Treatment. C. R. Burr, Portland, Maine.
123 Clinical Society of New York Polyclinic Medical School and Hospital. D. S. Dougherty.

International Journal of Surgery, New York.

July.

124 Ectopic Gestation. R. Waldo, New York.
125 Prostatic Obstruction: Its Radical Cure. P. Syms, New York.
126 Death Due to Careless Plugging of Nose: Remarks on Treatment of Nasal Hemorrhages. W. Freudenthal.
127 Radical Cure of Cancer of Uterus. A. L. Smith, Montreal, Canada.
128 Surgical Diagnosis. F. D. Gray, Jersey City, N. J.

Northwestern Lancet, Minneapolis.

July 1.

129 Examination of Feces. C. Nootnagel, Minneapolis.
130 Intestinal Amebiasis. C. H. Bradley, Minneapolis.

FOREIGN.

Titles marked with an asterisk (*) are abstracted below. Clinical lectures, single case reports and trials of new drugs and artificial foods are omitted unless of exceptional general interest.

British Medical Journal.

August 12.

1 *Behavior of Leucocytes in Malignant Growths. J. B. Farmer, J. E. S. Moore and C. E. Walker.
2 Disposal of Wounded in a Naval War. C. M. Beadnell.
3 Arrangements for Treatment of Wounded in Action on Board H. M. S. *Magnificent* (Majestic Class). O. W. Andrews.
4 Collection and Distribution of Wounded in a Modern Cruiser Engagement. T. Austen.
5 Remarks and Suggestions on the Head Dress of Certain Ratings in His Majesty's Fleet. E. J. Biden.
6 Voluntary Civil Ambulance Wagon. H. J. Barnes.
7 Dysentery: Its Causation, Varieties and Treatment on Active Service. E. L. Jenkins.
8. Id. N. Faichnie.
9 Military Medical Reserve Difficulty. M. M. O'Connor.
10 Care of Soldier's Feet. P. B. Giles.

1.—See abstract in The Journal, Sept 2, 1905, page 742.

The Lancet. London.

August 12.

11 Chemical Correlation of the Functions of the Body. E. H. Starling.
12 Notes on African Pigmies. G. E. Smith.
13 *Frontal Sinusitis: Two Cases of Death After Operation. St. C. Thomson.
14 Case of Parotitis Due to the Pneumococcus. S. Hastings and W. T. Hillier.
15 *Aspiration in Diseases of the Ear and Nose. M. R. Souderman.

16 Delayed Chloroform Poisoning. E. W. Scott Carmichael and J H. Beattie.
17 *Congenital Multiple Occlusions of the Small Intestine. J. G. Emanuel.
18 *Case of Sacculated Aneurism of the Abdominal Aorta, Treated by the Introduction of Silver Wire and the Passage of Constant Current. C. A. Griffiths.
19 Fracture of Head of Radius. R. Knox.

13. **Frontal Sinusitis.**—Thomson reports 2 cases, both terminating fatally. In the first case the cause was meningitis following an osteomyelitis due to septic absorption from chronic suppuration in the frontal and ethmoidal sinuses. Evidently the traumatism caused by the Caldwell-Luc operation performed on the left maxillary sinus stimulated the latent suppuration in the ethmoid and frontal cavities of the same side, and surgical treatment of the left frontal sinus led to septic absorption from the chronic suppuration going on in the frontal and ethmoidal sinuses on the opposite side. This patient died three months from the onset of symptoms and two months from the first opening of the left frontal sinus. The second patient died about a year and a half after the first operation from a meningitis caused by subdural abscesses. Thomson concludes as follows: 1. In cases of multisinusitis it is well to drain the maxillary cavity some time before the frontal sinus is operated on. Both cavities may be operated on at the same time; but if only one sinus is operated on at a time it should be the frontal sinus, the lower cavity being drained until it can be opened. 2. In spite of a free opening of the frontal sinus, the establishment of a large communication with the nose, and the avoidance of closure of the external wound, a slow infection of the bone may take place leading ultimately to infection of the meninges. This may even be started in suppurating cavities on the side opposite to the one operated on. 3. The local condition of the wound, as well as the pulse, temperature and feelings of the patient, may fail to indicate the onset of mischief. After from one to three weeks this is revealed by headache, pain, tenderness and puffy swelling on the forehead or around the eyes. 4. When septic osteomyelitis has started the most vigorous measures may fail to arrest it. It may last one and a half years before terminating fatally. 5. The chief danger appears to lie in the ethmoidal labyrinth, owing to its anatomic irregularities and to the difficulty of treating them satisfactorily. 6. Up to the present the operation which best meets these difficulties is that of Killian. In many cases a preliminary endonasal operation on the ethmoid is advantageous.

15. **Aspiration in Diseases of the Ear and Nose.**—Sondermann has devised an apparatus for aspiration in diseases of the ear and of the nose which, he believes, possesses no disadvantages. It consists of a hollow mask open at one side and surrounded by a hollow ring of hardened rubber, and by means of an elastic tube it is connected with the suction ball. The latter, as well as the elastic tube, possesses a valve by which the air can only pass outward after the suction ball has been compressed. As the mask is of triangular shape it can also be applied to the nose if required. By a slight pressure it fits almost hermetically on the skin and, therefore, can be applied easily at any time by the patient himself without the help of another person. There is no contact whatever with the external meatus and its contents and there is scarcely any danger to be feared from too strong a suction, as the rarefaction of air is spread over a relatively large space and can not exceed the amount corresponding to the elasticity of the suction ball. In cases of acute suppuration a slight aspiration will be found sufficient in order to evacuate the pus from the middle ear and even from the cells of the mastoid process into the external meatus. On the other hand, in cases of chronic empyema a stronger suction ball can be used, and especially when the membrana tympani or the ossicles are partly or entirely missing. Then it will be possible to exert a more intense suction, by which less fluid secretions are discharged if the nidus is connected with the middle ear. To this must be added that the walls of the cavity are artificially rendered hyperemic. In two cases of acute suppuration of the middle ear in which the mastoid process was also affected by the disease, as was shown by the swelling and the tenderness, and in which the intense pain continued in spite of the free and copious discharge of pus, the aspect of both the cases changed at once after the pus had been evacuated several times a day by aspiration. The pain and tenderness ceased almost directly as well as the discharge and the patients rather liked the aspiration because they felt an immediate relief in both head and ear. The result of the treatment has also been satisfactory, for the condition of the ears after the application was by no means worse than it had been before. It appears from this that the ears had not in any way been injured by the suction method, although it had been frequently applied. On the other hand, it is scarcely to be feared that any harm should result as the suction force required for evacuating pus is but slight. There is no doubt but that the patients are treated in this way far more pleasantly than by attempts at removing pus by compressing the air in the Eustachian tube or in the external meatus. The apparatus used for the suction method when applied to the nose has the same form as the one described above, but, of course, its mask is smaller, as the two nostrils and their immediate neighborhood only need be hermetically closed.

17. **Congenital Multiple Occlusions of Small Intestine.**—The small intestine of the patient, in the case reported by Emanuel, was occluded in three places, while in five others the lumen of the bowel was practically obliterated by angular constructions giving rise to a localized distention of the intestine immediately above, and a relative collapse below the points of construction. The specimen was taken from an infant seven months old. Operative interference was deemed inadvisable. On opening the abdomen at autopsy, the most conspicuous feature was a distended duodenum which was of even greater volume than the stomach. The bowel was completely obliterated at the duodeno-jejunal junction. The second and third obliterations were found in the jejunum. The annular constrictions were all situated in the jejunum.

18. **Silver Wire and Electricity in Aneurism of Abdominal Aorta.**—The aorta having been exposed, Griffiths selected a spot on the surface of the tumor devoid of large vessels, and enclosed a small circle in a purse-string suture. Through the center of this a fine long metal trocar and cannula were thrust well into the sac. The trocar was withdrawn, the cannula remaining in position, and through this was introduced a vulcanite cannula for insulating purposes. Next some fine silver wire was introduced into the sac through the double cannula. After a foot or so of wire was introduced the wire kinked, so it was cut off flush with the cannula and pushed home with a ramrod which had been specially prepared with a cupped end for this purpose. Some more wire was then pushed through and connected with the negative terminal of a constant current battery, the circuit being completed through the patient by means of an electrode placed on the thorax. A current of from 15 to 25 milliamperes was given and continued for 15 minutes. At the end of this time it was noticed that the aneurism felt harder and the expansile pulsation had grown less even if it had not quite disappeared. The wire (about six feet) was then pushed home with the ramrod, and the cannula withdrawn. The purse-string suture was tied, and the abdomen closed. It was noticed after the abdomen was closed that the bulging caused by the tumor had almost disappeared. The patient suffered greatly from shock and although consciousness was recovered, restlessness was very marked, the patient throwing himself about and exhausting what little pulse remained. He died five and a half hours after operation. The postmortem examination showed that there had been no hemorrhage. The heart was healthy; the arch of the aorta showed signs of atheromatous changes. The aneurism came off from the main trunk of the abdominal aorta and communicated with it by means of a narrow elongated mouth about one and a half inches in length. The sac was filled with a dark clot and coiled wire, a double loop of which had entered the aorta and passed for about two and a half inches up into the thoracic aorta. There was no erosion of the vertebræ.

Revue de Chirurgie, Paris.

Last indexed XLIV, page 1968

21 (XXV. No. 6.) Un cas de hernie interstitielle chez une fille de neuf ans avec remarques sur cette forme de hernie (interstitial hernia in girl of 9). C. Greene-Cumston (Boston).

22 *Forward Dislocation of Atlas in Man of Megalithic Age.—Pathologie prehistorique: un cas de luxation simple de l'atlas sur l'axis en avant chez un homme de l'époque mégalithique. M. Baudouin.

22. Luxation of Atlas in Man of Megalithic Age.—Baudouin, in conducting antiquarian researches in the western part of France last year, excavated a skeleton with forward dislocation of the atlas. The skeleton was found under an enormous slab of stone, and before it was removed it was preserved intact by pouring a solution of silica over it. The depression in which it lay was also silicated, thus confirming the findings in the skeleton. The luxation was evidently accidental, due to the falling of the large slab. Baudouin reviews other cases of forward luxation of the atlas on record, showing the exact correspondence with the findings in this skeleton of a prehistoric being.

Presse Médicale, Paris.

23 (No. 46, June 10.) Diagnostic des tumeurs de l'hypochondre droit. T. Tuffier.
24 (No. 47.) *Des embolies hydatiques de l'artère pulmonaire. M. Garnier and J. Jomier.
25 *L'hydro-hémolyse. Recherche du bacille de Koch et des autres microbes dans le sang. L. Nattan-Larrier and A. Bergeron.
26 (No. 53.) Contribution à l'étude de l'hermaphrodisme des voies génitales. G. Lombardi.
27 (No. 54.) Pathogénie de l'appendicite. P. Reclus
28 Les conséquences gynécologiques du Malthusianisme. L. M. Bossi.
29 Traitement local des urétrites chroniques. P. Lebreton.
30 (No. 55.) Affolement bulbaire (disturbances with anguish). M. L. Levi.
31 Réduction des luxations récentes de l'épaule par un procédé simple et non-douloureux (treatment of dislocation of shoulder). H. Huguier.

24. Hydatid Embolism of Pulmonary Artery.—The syndrome induced may be that of ordinary embolism of the lungs, or it may be modified by the character of the embolus. The special syndrome is characterized by sudden onset accompanied by symptoms suggesting ordinary pulmonary embolism, but with the intense, persisting dyspnea unaccompanied by distinct stethoscopic signs. Hemoptysis and symptoms of asystole also develop, terminating fatally in time. In some cases an ascending infection hastens the accidents and death ensues in a syndrome suggesting pneumonia. A history of hydatid cysts elsewhere facilitates the diagnosis. The hydatid vesicle does not completely obstruct the vessel, nor does it entail secondary thrombosis, but the disturbance in the circulation proves fatal sooner or later. In the 12 cases on record, the affection had a protracted course in 4. The patient in the case described was a printer of 42, previously apparently healthy, who succumbed in a few days with dyspnea, cyanosis and other symptoms suggesting pneumonia.

25. Hydro-Hemolysis Test for Tubercle Bacilli.—Ten c.c. of human blood are diluted with 200 gm. of distilled water which destroys the blood corpuscles almost at once. The limpid fluid is then distributed in two or three vials and centrifuged; the sediment is then spread on six or eight cover glasses and examined for bacilli. These stain and show up finely, and are detected with much greater facility and more promptly than by other technics.

Semaine Médicale, Paris.

32 (XXV, No. 25, June 21.) *Tétanie d'origine parathyroidenne. G. Marinesco.
33 (No. 26.) *Traitement chirurgical précoce des collections liquides endo-pulmonaires, non tuberculeuses. F. Lejars.
34 (No. 27.) *La rétention de l'urée dans le mal de Bright, comparée à la rétention des chlorures. F. Widal and A. Javal.
35 (No. 29.) *Les émotions morales peuvent-elles déterminer des affections organiques aigues du système nerveux? L. Cheinisse.

32. Tetany of Parathyroid Origin.—Marinesco's article is a clinical lecture on a case of intermittent tetany exhibiting several symptoms supposed to be peculiar to exophthalmic goiter. He reviews the various causes of tetany, calling attention to the fact that the thyroid body becomes hypertrophied during gestation, and that the lack of this physiologic hypertrophy is liable to entail serious disturbances. On the other hand, gestation has an unfavorable influence on already existing thyroid and parathyroid insufficiency, as has been abundantly proved by clinical and experimental research. This suggests that tetany and eclampsia may be the result of parathyroid insufficiency. This assumption is corroborated by Vassale's recent success in treatment of eclampsia with extract of parathyroid glands, chronicled in THE JOURNAL recently, page 363. Marinesco put his patient on this organ therapy and during the twenty-three days interval at date of writing the tetany had not reappeared and the other symptoms had gradually subsided. He used beef parathyroid glands and is convinced that this parathyroid treatment has a promising future in treatment of various forms of spasmodic contractions.

33. Early Surgical Treatment of Intrapulmonary Non-Tuberculous, Fluid Pockets.—Lejars denounces the dilatory way in which morbid processes in the lungs are allowed to develop unhindered. Their spontaneous irruption into the air passages and expulsion by a vomica are rare occurrences and the physician should not trust to such an event. The dangers of delay outweigh those of a vague diagnosis, and early surgical intervention should be the rule, not the last resource. It is the only means of cure in the majority of cases, and the physician and surgeon should endeavor to popularize it.

34. Retention of Urea in Bright's Disease.—Widal and Javal summarize their extensive study of this subject in the statement that chlorids and urea may be retained in the organism together or separately in the course of Bright's disease. The mechanism of their accumulation varies for each. In the course of the "uremic" state the phenomena due to the retention of the chlorids are distinct from those due to the accumulation of nitrogen in the blood. These two kinds of retention offer entirely different indications for dietetic treatment. Deprival of salt is effectual in combating the water-accumulating effects of retention of the chlorids. When the nitrogenous bodies are accumulating in the blood, ingestion of albuminoids should be reduced. Administration of from 100 to 150 gm. of lactose aids in nourishing the patient while it does not favor the development of toxic substances, and with abundance of water is liable to banish the attacks of eclampsia and the edema, as occurred in a recent case in Lemierre's experience, after four days of this lactose and water diet. The theoretic régime for a patient with retention of nitrogenous bodies would be exclusively carbohydrates and fats, substances which form merely carbonic acid and water in their disassimilation. Such a diet, however, could be imposed only for a short time, as albuminoids are necessary for regeneration of the tissues. Comparison of the proportion of urea in the blood with the proportion of albumin in the diet allows the quantity of albuminoids to be ingested to be scientifically regulated. Local or general venesection is a valuable aid in this disease, and it allows surveillance of the proportion of urea in the blood which should be systematically determined. As a general rule, however, the amount of albumin allowed in Bright's disease should be moderate but sufficient. Milk is not so innocent as generally supposed, for 3.5 liters contain about 120 cm. of albumin, that is, more than the normal man has need of. The milk supplies also too much water for certain cases. Out of 3 patients who died with an excess of urea in the blood, 2 had been on a milk diet for several weeks and one had ingested nothing but 3 liters of milk a day for the space of two years, when the first symptoms of the terminal uremia developed. It must not be forgotten that the nitrogen in the food, whether from meat, vegetables or milk, leads to the production of urea. Milk owes its value in kidney disease to the lack of salt, and Widal's experience has demonstrated that it can be advantageously replaced by substituting for 3 liters of milk, 400 gm. of meat and 500 gm. of bread, without salt, or a milk-vegetable diet which is much more appetizing. Meat in itself is not injurious in kidney disease. As a general rule, from 100 to 200 gm. of meat will be found sufficient to supply the necessary albuminoids while imparting variety to the diet. Research on patients whose blood was tested repeatedly for urea, has only confirmed the value and harmlessness of this amount of meat given in combination with starchy substances or milk. An excess of salt should always be avoided in the diet as a precautionary measure, and likewise an excess of albumin, as one never knows when accumulation and retention may be impending.

35. **Are Moral Emotions Able to Induce Organic Nervous Affections?**—Cheinisse answers his question in the affirmative, and cites a number of instances to sustain his assertion that a psychic shock under certain circumstances may induce an anatomic lesion of the nerve centers, just as it may favor the development of epilepsy, hysteria or a neurosis of any kind. He insists also on the fact that a certain interval may and usually does elapse between the emotion and the first manifestations of the consecutive nervous affection. Paralysis from fright and similar affections may be readily cured by appropriate measures, but, on the other hand, they may persist, and the prognosis should always be more or less guarded.

Berliner klinische Wochenschrift.

36 (XLII, No 26, June 26.) Aetiologie und spezifische Therapie des Heufiebers (hay fever). Dunbar.
37 Ueber Isoform-dermatitis bei einem mit Iodoform-Idiosynkrasie behafteten Kranken. E Hoffmann.
38 *Eine neue Palliativ-operation bei benignen Mastdarm-Strikturen (of rectum). Leuk.
39 Heilung der tuberkulösen Peritonitis an einem spontan geheilten Falle. A. Köppen (Norden).
40 Ueber den Wirkungskreis der Balneotherapie in der Gynäkologie. L. Nenadovics.
41 *Ueber die primäre Mikrogastrie. J. Bendersky.
42 *Die Balneotherapie der Harnkrankheiten (of urinary affections). C. Posner.
43 Mushroom Poisoning.—Pilzvergiftung. T. A. Maass.

38. **Palliative Operation on Stricture in Rectum.**—Leuk has performed in several cases an exceedingly simple operation which apparently answers the desired purpose as effectually as the more complicated technics. His first patient was a woman of 35, with a history of syphilis. Between 4 and 5 cm. above the anus a circular stricture narrowed the lumen to 1 cm. He excised a wedge of the stricture large enough to allow the passage of feces through the opening thus enlarged. The incision was restricted to the constricting parts, and did not enter the underlying tissues. This prevented any secondary cicatrix formation and shriveling. The excision was done through the speculum without fear of hemorrhage, as Allingham has expressly declared that "hemorrhage from the rectum need not be feared." During the two years since the patient has been free from any disturbances in defecation without restrictions as to diet. The local inflammation in the rectum has been materially reduced, and the general health has improved, while there has been no further increase in the constriction. The effects were equally good in two similar cases. He urges that this simple measure should be given a trial before undertaking more complicated technic, as it is liable to prove all that is necessary, and if not, it does not interfere with more radical procedures later.

41. **Congenital Small Stomach.**—Bendersky's article on what he calls "microgastria" has already been mentioned in these columns. He has found that certain persons, always women, have an abnormally small stomach. They suffer from repeated uncontrollable vomiting, apparently of the nervous type. They are also subject to obstinate hiccoughing. He thinks the condition is analogous to the infantile uterus, and suggests that the food should be taken in small amounts. Treatment is of little use except possibly repeated lavage of the stomach, as the mucous membrane seems to be abnormally sensitive in these cases.

42. **Balneotherapy in Urinary Affections.**—Among the points emphasized by Posner is the necessity for discriminating between salt-containing and salt-free waters in treatment of urinary affections. The action of salt in inducing edema has been amply demonstrated in the last few months. Chronic catarrh of the bladder and kidney pelvis seem to be best adapted for treatment with mineral waters. Chronic parenchymatous nephritis contraindicates them. Neuroses of the urinary and sexual apparatus are often favorably influenced by a course of treatment at a watering place.

Deutsche medizinische Wochenschrift, Berlin and Leipsic.

Last indexed page 669.

44 (XXXI, No. 26.) Official Reports on Epidemic Cerebrospinal Meningitis. v. Lingelsheim and Radmann.
45 Ueber Darstellungsweise und Befund der bei Lues vorkommenden Spirochaete pallida. K. Herxheimer and H. Hübner.
46 Zur Färbung der Spirochaeta pallida (improved stain). G. Giemsa.
47 *Die Behandlung infektionsverdächtiger und infizierter Wunden, einschliesslich der panaritialen, phlegmonösen, furunculösen Entzündungen (treatment of inflammations). P. L. Friedrich.
48 Myopie-Operation und Netzhautablösung (detachment of retina). A. v. Hippel.
49 *Zur Diagnose und Therapie der chronischen Perityphlitis. A. Albu. (Commenced in No. 25.)
50 Ueber Bau und Einrichtung von Räumen zur Behandlung von Gehstörungen (equipment for treating disturbances in walking). Kann.
51 (No. 27.) Behandlung der Ekzeme. O. Lassar.
52 *Ueber die Diagnose und Therapie der chronischen Perityphlitis. I. Boas.
53 *Perityphlitis und Gravidität. C. J. Gauss.
54 *Zur Behandlung eingeklemmter Brüche (incarcerated hernia). Brix.
55 (No. 28.) *Ueber Kleinhirn-Cysten (cysts in cerebellum). Lichtheim.
56 *Technic of Removal of Cancer in Rectum.—Die Erhaltung des Schliessmuskels bei der Exstirpation des Mastdarmkrebses und seine spätere Funktion. P. Kraske.
57 Zur Frage der Bildung von bakteriellen Angriffsstoffen im lebenden Organismus (aggressin formation). A. Wassermann and J. Citron.
58 Surface Tension of Body Juices.—Ueber die Oberflächenspannung von Körpersaften unter physiologischen und pathologischen Bedingungen. A. Bickel.
59 Anemia and Liver Functions in Syphilis.—Untersuchungen zur Pathogenese der Anämie und zur Funktionsprüfung der Leber bei Syphilitikern. C. Stern.
60 Der Tod in der Morphinum-Skopolamin Narkose (death from anesthetic). H. Landau.
61 *Zur lokalen Sensibilisierung und Immunisierung der Gewebe gegen die Wirkung der Radiumstrahlen (tissues and radium rays). R. Werner.

47. **Treatment of Infected or Suspicious Wounds.**—Friedrich writes from Bier's clinic and states that his observation of Bier's method of treating even acute inflammations by inducing passive congestion has converted him from a pronounced opponent to an admirer, although he is waiting for time to pass final judgment on this technic. He is convinced that the adoption of physical measures in the treatment of wounds, abandoning the chemical, and striving to promote and supplement the biologic processes, is the greatest advance since Lister. In all wounds suggesting the possibility of tetanus, he advises total excision of the focus and foreign body, supplemented by preventive injections of antitoxin.

49. **Treatment of Chronic Perityphilitis.**—Albu proclaims that the indication for surgical intervention, in these cases at least, should not be the pathologic condition, but the impairment of health. He does not advise operating in chronic perityphilitis unless the diagnosis is absolutely sure, and when serious disturbances persist after careful internal treatment, including rest in bed, regulation of the bowels, wet packs, sitz baths and belladonna. He relates a number of cases which simulated chronic appendicitis but proved to be visceral neuralgia or hysteroneurasthenia, spastic obstipation or other affection, readily yielding to the above internal measures.

52. **Id.**—Boas does not regard the prognosis of chronic appendicitis as very serious, but still he advises the removal of the appendix even in the cases in which the inflammation never becomes acute. Internal treatment is of little benefit in these interminable chronic cases. Chronic inflammation developing after an acute attack should always be operated on, as also persisting disturbances in children and at the age of puberty. In the young, physical and dietetic restraint is absolutely unenforceable, and the appendix should be removed. He has never known of an instance of the complete cure of chronic perityphilitis. Sooner or later the patients return.

53. **Appendicitis and Pregnancy.**—Gauss describes 2 cases of appendicitis complicating pregnancy to call attention to the difficulty of diagnosis and the special indications in these cases. Differentiation and treatment require simultaneous gynecologic and obstetric experience with surgical and internal medical co-operation.

54. **Treatment of Incarcerated Hernia.**—Brix again calls attention to the readiness with which incarcerated hernia can be reduced after being sprayed with ethyl chlorid. He has frequently witnessed spontaneous reduction of the hernia under the spray.

55. **Cysts in Cerebellum.**—Lichtheim reports 2 cases of cysts in the left half of the cerebellum accurately diagnosed and operated on by Garré. The symptoms subsided afterward in each case with the exception of the irreparable optic atrophy.

He urges exploratory incision and prompt intervention to forestall choked disc in such cases.

56. Retention of Sphincter Muscle in Removing Rectal Cancer.—Kraske reports 14 cases which illustrate the advantages of the technic which he advocates and follows.

61. Means to Enhance Action of Radium Rays.—Werner relates the result of extensive research on the action of radium and means to enhance it. He found that the tissues reacted much more intensely to the rays when previously sensitized with injections of activated lecithin or of a solution of eosin. Still better results were obtained by a slight preliminary inflammatory reaction induced either by chemical, thermic or mechanical irritation or congestion. He became convinced that the local accumulation and destruction of leucocytes by these measures was an important factor in the result, and hence increased it by preceding leucocyte-attracting injections of turpentine or nucleic acid. He also found it possible to render the tissues more resistant or immune by a preceding prolonged irritation, refrigeration or preliminary exposure to the rays. He suggests that a combination of these various measures might materially enhance the value of radium therapy. By rendering the surrounding tissues immune and by increasing the susceptibility of the pathologic tissues, it might prove possible to increase the intensity of the exposure and to lengthen it without harm.

Jahrbuch f. Kinderheilkunde, Berlin.

Last indexed page 664.

62 (LXI, No. 1.) *A Model Pediatric Clinic.—Entstehung der Breslauer Kinderklinik, die Aufgaben einer pädiatrischen Klinik und den Betrieb wie er in Breslau in Klinik und Poliklinik geübt wird. A. Czerny.
63 Zur Frage des künstlichen Morbus Barlow bei Tieren (experimental scorbutus).
64 Fat in Food and Infant [illegible] kung der Fettdarreichung auf den [illegible] W. Freund.
65 3 Fälle [illegible] ocephalus
66 Lähm [illegible] (paraly.
67 *Ueber [illegible] ert.
68 Elimin [illegible] in Infant [illegible] Stickstoff [illegible] und seine Bedeutung. R. Quest.
69 *Treatment of Obesity in Children.—Ueber Entfettungskuren im Kindesalter. A. Orgler.
70 *Lime in Infantile Brain.—Ueber den Kalkgehalt des Säuglingsgehirns und seine Bedeutung. R. Quest.
71 Zur Kenntnis der natürlichen Immunität des Kindes im ersten Lebensjahr (under one year). A. Schütz.
72 Ueber Demineralisation und Fleischtherapie bei Tuberkulose (zomotherapy). F. Steinitz and R. Weigert.
73 Beitrag zur Frage der Thymus-Hypertrophie. G. Tada.
74 Ueber die Herkunft des fötalen Fettes (origin of fetal fat). M. Thiemich.
75 *Influence of Diet on Ch[illegible]rganism.—Ueber den Einfluss [illegible] chemische Zusammensetzung des [illegible]
76 *Die exsudative Diathese. A. Czerny.
77 (No. 2.) Aims of Modern Pediatrics.—Die Grundlagen und Ziele der modern Pädiatrie. Th. Escherich.
78 Zur Kenntnis der Poliomyelitis anterior acuta und subacuta s. chronica. E. Lövegren.
79 Biologisches zur Milch-Pasteurisierung (of milk). A. Hippius (Moscow).
80 Zur Kenntnis des Meningococcus intracellularis. B. Weyl.
81 (No. 3.) Ein weiterer Beitrag zur Kenntnis der Energiebilanz beim Säugling (balance of energy in infants). O. Heubner.
82 Acetonuria in Infectious Diseases in Children.—Zur Kenntnis der Azetonurie bei den Infektions-Krankheiten der Kinder. L. F. Meyer.
83 Die Acidose im Kindesalter (in children). L. Langstein and L. F. Meyer.
84 Immunisierung durch Milch (immunization by milk). B. Salge.
85 Zur Bekämpfung der grossen Säuglingessterblichkeit (infant mortality). M. Ebert.
86 Zur Kenntnis des periodischen Erbrechens im Kindesalter (periodical vomiting of children). P. Misch.
87 (No. 4.) Food and Energy Needed by Breast Fed Infant.—Beitrag zur Frage nach dem Nahrungs und Energiebedürfnis natürlich ernährten Säuglings. P. Reyher.
88 Ueber den Fettgehalt der Frauenmilch (fat in human milk). Id.
89 Zur Kenntnis des Kreatininstoffwechsels beim Säugling (creatin metabolism in infants). H. Rietschel.
90 Zur Kenntnis der hämorrhagischen Erytheme im Kindesalter. L. Langstein.
91 (No. 5.) *Ueber "paradoxes Schwitzen" beim Kinde (paradoxical sweating in a child). J. Zappert.
92 Poliomyelitis - Klinische Untersuchungen an 240 Fällen von spinaler Kinderlähmung (spinal paralysis). R. Neurath.
93 Tuberkulose im ersten Lebensjahre (in first year of life). F. Steinman (Zurich).
94 Serum-Behandlung der Diphtherie. Zur Haltbarkeit des Serums. R. Kraus.
95 Ueber congenitale familiäre Hypoplasie des Kleinhirns (of cerebellum). H. Frenkel and L. Langstein.

62. The Breslau Clinic for Children's Diseases.—Czerny protests against regarding the infant department as a mere appendix to the pediatric clinic. It should be considered the most important feature of the institution. Orthopedics and surgery have no place in the pediatric polyclinic, it should be devoted almost exclusively to children under two years of age. It should aim to keep a running record of each case and to follow the children from year to year. By this means, material of incalculable value will be accumulated, and many workers in various well-managed children's clinics can cooperate in a single task. Study of the physiology and pathology of the child during its first two years of life is the most important part of the pediatrist's work.

67. Alimentary Albuminuria.—Kaliski and Weigert fed large amounts of albumin to healthy children—as much as 24 raw eggs in two days in some instances, and 42 in three days in another. In only 2 of the entire number of children could even traces of albumin be detected in the urine thereafter. The tests with cooked albumin were all negative. They suggest as a possible explanation for alimentary albuminuria the assumption of insufficient digestion—a condition of gastric achylia. Persons in this condition should be preferred for the tests.

69. Treatment of Obesity in Children.—Orgler recommends potatoes and fluids in abundance with avoidance of fat and sauces. An obese boy on these restrictions lost ten pounds in the course of a month. The nitrogen balance was kept up or nitrogen taken in excess, as shown in the dietary appended.

70. Lime Content of Infants' Brains.—Quest announces that the proportion of lime in the brain of the fetus or newlyborn child is remarkably large, but that it soon sinks to the ordinary proportion. He is inclined to regard a deficiency of lime as possibly responsible for the increasing tendency to cerebral excitability in children. The brains of 3 children who had succumbed to convulsions showed an abnormally small proportion of lime in their composition.

75. Influence of Food on Chemical Composition of Organism.—The percentage of water is a decisive factor in artificial culture media, and Weigert suggests that this may be a factor also in individual immunity. Extensive experiments on animals demonstrated that the character of the food has a marked influence on the retention of water in the body. The proportion of water is the highest when the food consists principally of carbohydrates. Other experiences are related which lend plausibility to this view that individual immunity may be influenced by the character of the food and the consequent retention of water. The large amount of easily digested fat in the breast milk may be one cause for the relative high immunity of breast-fed children.

76. The "Exudation Diathesis."—Czerny suggests that a congenital anomaly may be responsible for various affections accompanied by exudation, such as eczema, recurring bronchitis, tonsillitis, retropharyngitis and other affections of mucous membranes. They form a group with features in common, suggesting a congenital anomaly of the juvenile organism. The course of the individual cases is determined by the character of the food, the condition of the nervous system and intercurrent infections. Avoidance of all overfeeding, a vegetable diet, excluding even eggs, and systematic disregard of exaggerated subjective disturbances and scrupulous avoidance of intercurrent infections are the most important means of combating this "exudative" diathesis.

91. Paradoxical Sweating in a Child.—The child was a girl of 6, who perspired at certain points, the back of the head, breast, etc., on exposure to cold. The tendency to this abnormal perspiration occurred at periods of a few months, with long intervals. Under arsenic the periods have become shorter, the intervals longer, and the tendency has been much reduced.

Therapie der Gegenwart, Berlin.

Last indexed page 667.

96 (XLVI, No. 6.) *Die Heilung des Krebses der Gebärmutter (cancer of uterus). Max Runge (Göttingen).
97 *Zur intravenösen Injektionstherapie. W. Doevenspeck.
98 *Ueber der Indikationen und Kontraindikationen der Anwendung von Eisenpräparaten bei Magenkrankheiten (iron in stomach diseases). H. Elsner (Boas' clinic, Berlin).

99. *Künstliche Sauermilch als diätetische Therapie kranker Säuglinge (artificially soured milk for sick infants). Otto Rommel (Munich).
100 "Ueber Arbeitstherapie" (occupation therapy). B. Laquer Wiesbaden). Reply to Veraguth.

96. **Cancer of the Uterus.**—Runge sees hope for better results in the treatment of carcinoma of the uterus in further improvement of operative technic, but more especially in an earlier diagnosis of the disease. The earlier the patient comes to operation the more satisfactory the results will be. The great moral responsibility resting on the family physician, to whom such patients usually first apply, must be thoroughly appreciated. The symptoms of beginning carcinoma should be borne in mind, especially the fact that pain is a late appearing symptom, and the importance of irregular and easily induced hemorrhage. The physician should realize that, especially in cancer of the cervix, the hours are precious and a day's delay in confirming the diagnosis may be fraught with momentous consequences. He should use every effort to persuade the patient to permit an immediate examination. A piece of tissue excised should be submitted at once to an expert. If doubt exists, it is best to send the patient at once to a specialist. It is important also that women should be instructed to note every suspicious symptom and not to be misled by the idea of "change of life," etc. Midwives are often consulted, and they should be cautioned against giving an opinion on these matters, and the physician should refrain from prescribing without thorough examination. Women should be cautioned against trusting to the representations of irregular practitioners.

97. **Intravenous Injections.**—Doevenspeck can not corroborate the favorable opinion of Mendel in regard to the results of intravenous injections of salicylic acid compounds and thiosinamin. He has had much less brilliant success, finding in several cases that, after the intravenous injection had failed, other modes of applying the salicylates were successful in curing obstinate rheumatic affections. The effect of thiosinamin in removing cicatricial tissue was never striking, and the failures outnumbered the successes. The author can not, therefore, agree with Mendel that this method will constitute the therapy of the future, on account of its exacting technic and of the fact that it offers only slight advantages over ordinary methods. He thinks, however, that it is capable of more extensive application than would appear from the present reports. Extensive trials of it have been made in Italy, where the intravenous route is commonly used, and animal experiments have shown that the veins bear the introduction of considerable amounts of various medicines without harm.

98. **Iron in Stomach Diseases.**—Elsner considers it established that iron is absorbed and assimilated, and that organic combinations are the most suitable for therapeutic administration because iron is contained in the food in proteid combination. A difference in the hemoglobin-forming power of the various preparations of iron has not been demonstrated, so that the choice of the various preparations at present should be decided by their effect on the digestive organs. Elsner experimented with a hemoglobin preparation to determine its effect upon the digestive functions. He concludes as follows: Symptoms of dyspepsia do not contraindicate the use of iron preparations, but in such case functional investigation of the stomach should precede the use of iron. Iron preparations are contraindicated in organic stomach diseases, with hyperacidity or hypersecretion, and if existing dyspeptic troubles are increased by the use of the iron.

99. **Artificially Soured Milk as a Dietetic Treatment for Infants.**—Remmel has substituted for buttermilk, as a food for sick children, an artificially soured milk made by inoculating pure centrifuged milk ("skim milk") with a pure culture of lactic acid bacilli. The milk is boiled with a chemically pure preparation of starch, which causes the casein to assume a colloidal form. The best test for the success of the preparation is the smell and taste. The odor should be feebly acid and pleasantly aromatic, and the taste should be a sweetish sour, never bitter or rancid. If the stomach rejects it or the number of stools are increased, the fault probably lies in the preparation. In such cases it should be omitted for a few days and a new beginning made with a fresh preparation. Soxhlet's nutrient sugar is added to the extent of 25 gm. per liter, together with an equal amount of cane sugar and from 10 to 15 gm. of the starch preparation. When cool, the "acidifying tablet" is added. This he has found to be of the greatest advantage, as it allows the use of other carbohydrates that otherwise could not be tolerated. This food is usually well liked by children. In regard to indications for the use of the soured milk he concludes that the acute, often febrile, bacterial diseases of the intestine after a period of abstinence, furnish an indication for the sour milk diet, with the exception of intestinal troubles caused by a too rich carbohydrate diet with fermentation and slimy stools. It is still more necessary, however, in chronic nutritive disturbances from the lightest dyspepsia with relative hypochylia, to the most severe, often apparently irreparable atrophy with extensive disturbance of metabolism. He suggests its use for adults in metabolic disturbances (diabetes and gout), as well as in gastrointestinal diseases and tuberculosis, and as a convalescent diet on account of its being rich in albumin, easily digested, and cheap.

Books Received

Acknowledgment of all books received will be made in this column and this will be deemed by us a full equivalent to those sending them. A selection from these volumes will be made for review, as dictated by their merits, or in the interests of our readers.

Address on Parental Right and Parental Responsibility. Viewed *in Relation to the Right of the Community*. C. K. Mackellar, M.B., M.L.C., at the Public School Teachers' Conference, June 26, 1905. Paper. Pp. 17. Published by the authority of the Government of the State of New South Wales. Sydney: Wm. A. Gullick, Government Printer, 1905.

Pathology and Morbid Anatomy. T. H. Green, M.D., F.R.C.P. Tenth American Revised from the English Edition, Revised and Enlarged by W. C. Bosanquet, M.A., M.D. 1 colored plate, and 348 illustrations. Cloth. Pp. 610. Price, $2.75 net. Philadelphia: Lea Brothers & Co., 1905.

Monthly Summary of Commerce and Finance of the United States. June, 1905. Department of Commerce and Labor Bureau of Statistics. No. 12. Series 1904-1905. Paper. Pp. 4,780. Washington: Government Printing Office, 1905.

Manual of the Diseases of the Eye, for Students and Practitioners. C. H. May, M.D. Fourth Edition. 360 original illustrations, including 21 plates, with 60 colored figures. Cloth. Pp. 391. Price, $2 net. New York: Wm. Wood & Co.

Ready Reference Handbook of Diseases of the Skin. G. T. Jackson, M.D. 91 illustrations and 3 plates. Fifth edition. Cloth. Pp. 676. Price, $2.75 net. Philadelphia . Lea Brothers & Co., 1905.

Text-Book of Physiological Chemistry for Students of Medicine. J. H. Long, M.S., Sc.D. Cloth. Pp. 424. Price, $2.50. Philadelphia: P. Blakiston's Son & Co., 1905.

NEW PATENTS.

Recent Patents of Interest to Phisicians:

795678	Apparatus for regenerating exhaled air for respiration purposes. Max Bamberger, F. Bock and F. Wanz, Vienna, Austria-Hungary.
795679	Regenerating exhaled air for respiration purposes. Max Bamberger, F. Bock and F. Wanz, Vienna, Austria-Hungary.
795573	Atomizer. Wm. J. Barber, Honeoye Falls, N. Y.
795757	Formaldehyd product and making same. Henry S. Blackmore, Mount Vernon, N. Y.
795510	Bottle holder for medicine cases. Augustus W. Hoff, New York, N. Y.
795524	Invalid elevator and truck. Richard Leffmann, Chicago, Ill.
795366	Oil-atomizer. Washington L. Parker, Elgin, Ill.
795562	Absorbent and deodorizer. Silvio T. Tatti, Buenos Ayres, Argentina.
795567	Endoscope or other optical instrument. Reinhold L. Wappler, New York.
795323	Apparatus for electrothermal treatment. D. M. Watson, Portland, Ore.
795469	Sanitary belt. Arthur M. Young, Chicago, Ill.
796114	Electrotherapeutic apparatus. H. E. Currey, Baker City, Ore.
795903	Physicians' operating table. Barzillai B. Foster, Portland, Me.
795866	Inhaler. Joshue R. Spanogle, Athena, Ore.
796791	Bedstead for invalids. James C. Anderson, Victoria, Can.
796552	Ligature container. Perry S. Bauer, Chicago, Ill.
796496	Peptonized milk and making same. J. H. Campbell, Brooklyn, N. Y.
796713	Making urea. Hans Foersterling and H. Philipp, Perth Amboy, N. J.
797094	Surgical bandage plaster. Jacob Benario, Frankfort-on-the-Main, Germany.
797510	Surgical bandage. Carl Fuhrhans, Munich, Germany.
797365	Douche. Christian W. Meinecke, Jersey City, N. J.
797024	Making phenol esters. Fin Sparre, Wilmington, Del.
797335	Artificial hand. Zachariah D. Taylor, Clay, W. Va.
797483	Bandage-rolling machine. Frank G. Wilkins, Washington, D. C.

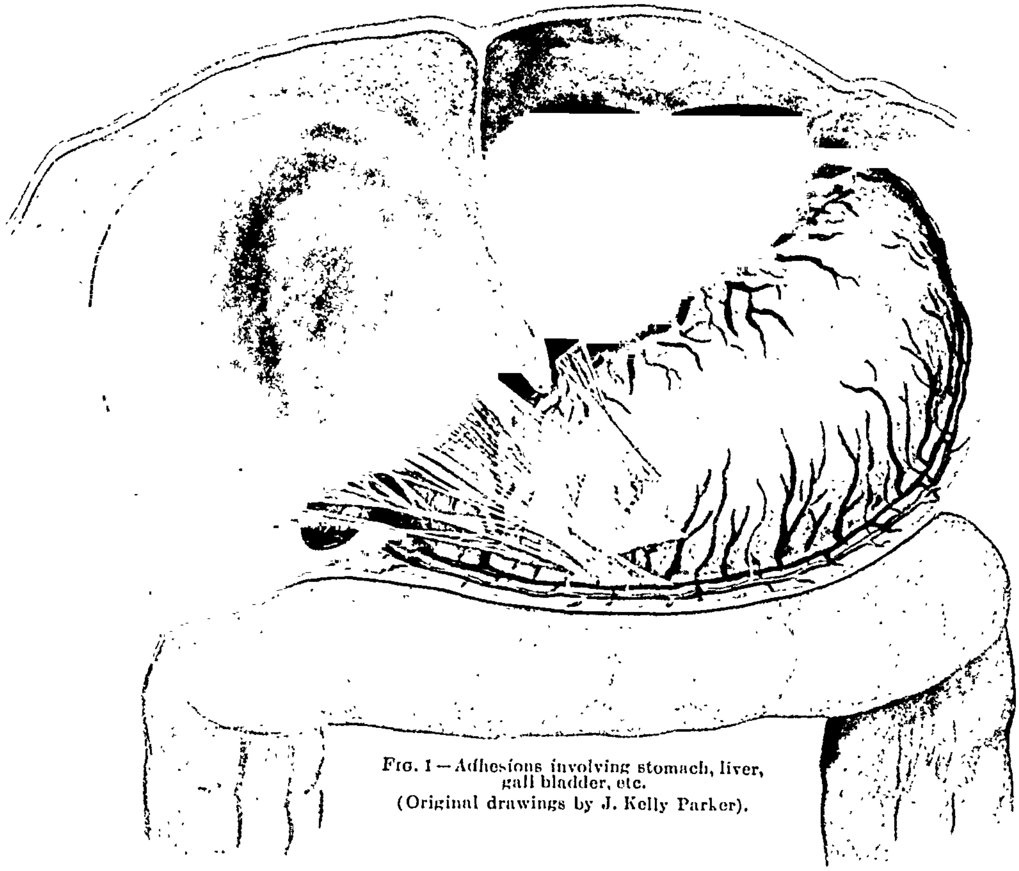
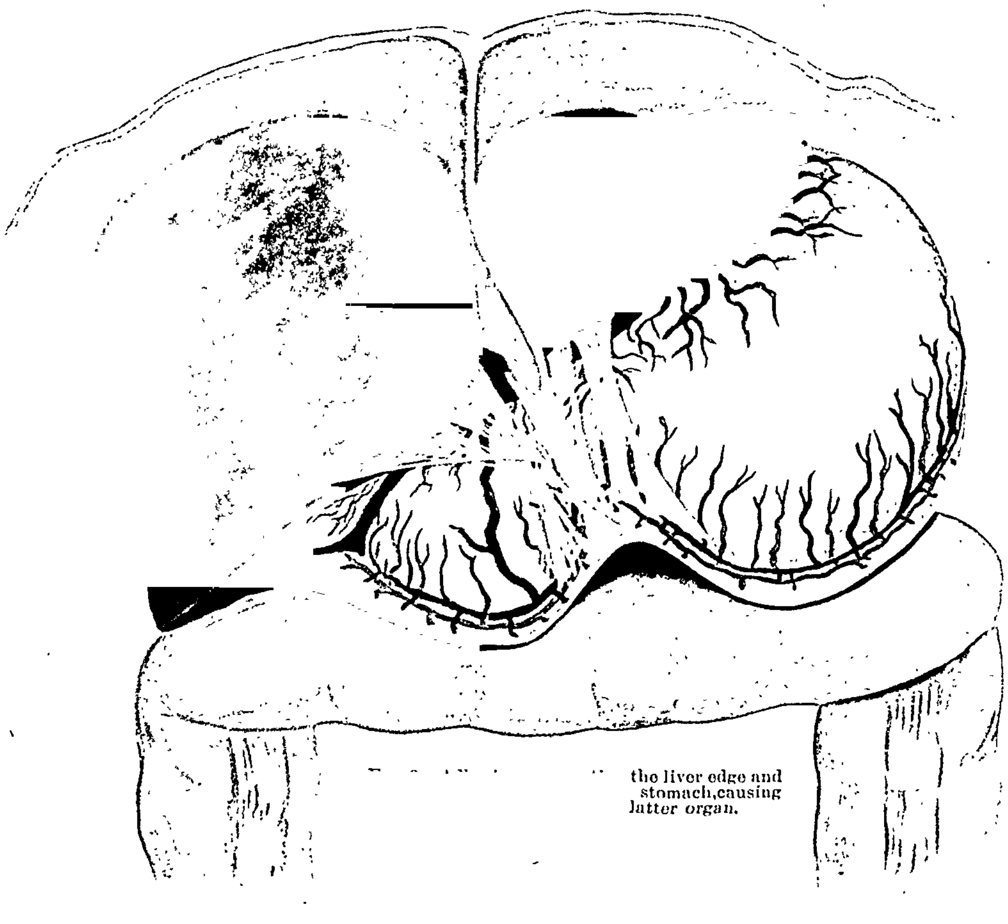


Fig. 1—Adhesions involving stomach, liver, gall bladder, etc.
(Original drawings by J. Kelly Parker).

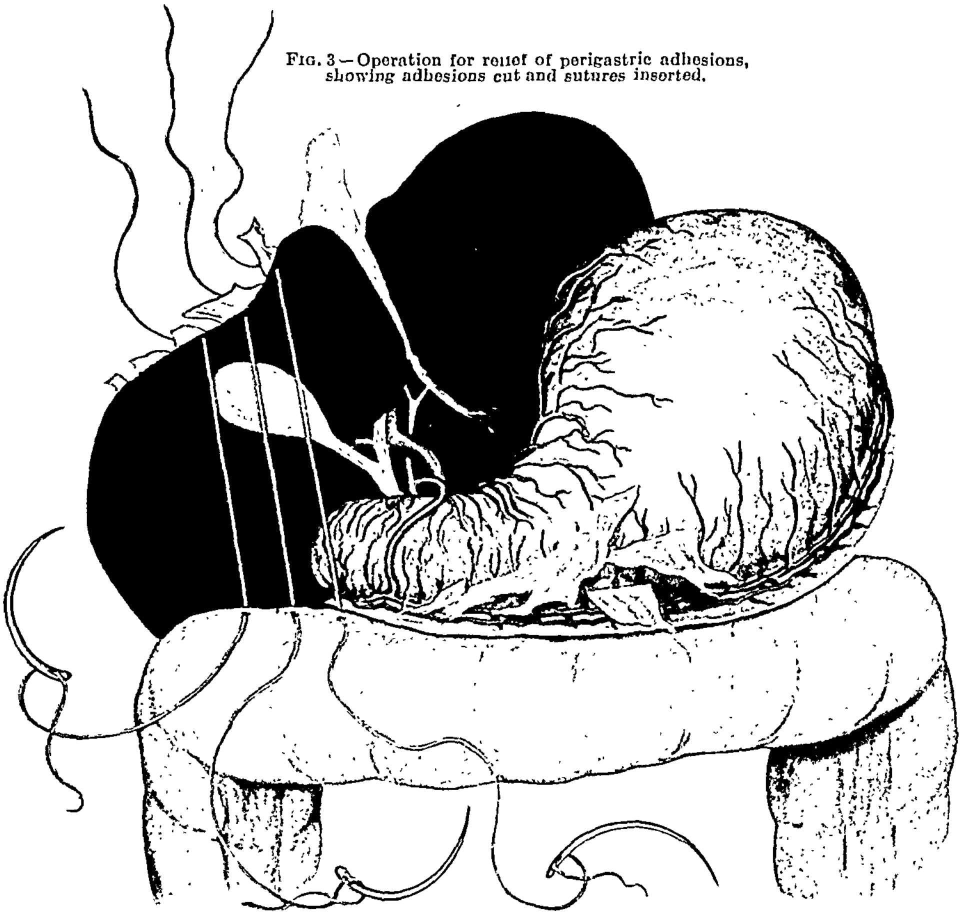


the liver edge and
stomach, causing
latter organ.

Supplement to
of the American Medical Association

Illustrating Dr. Andrews' Article on "Colon Substitution
for Perigastric Adhesions"

Fig. 3 — Operation for relief of perigastric adhesions, showing adhesions cut and sutures inserted.



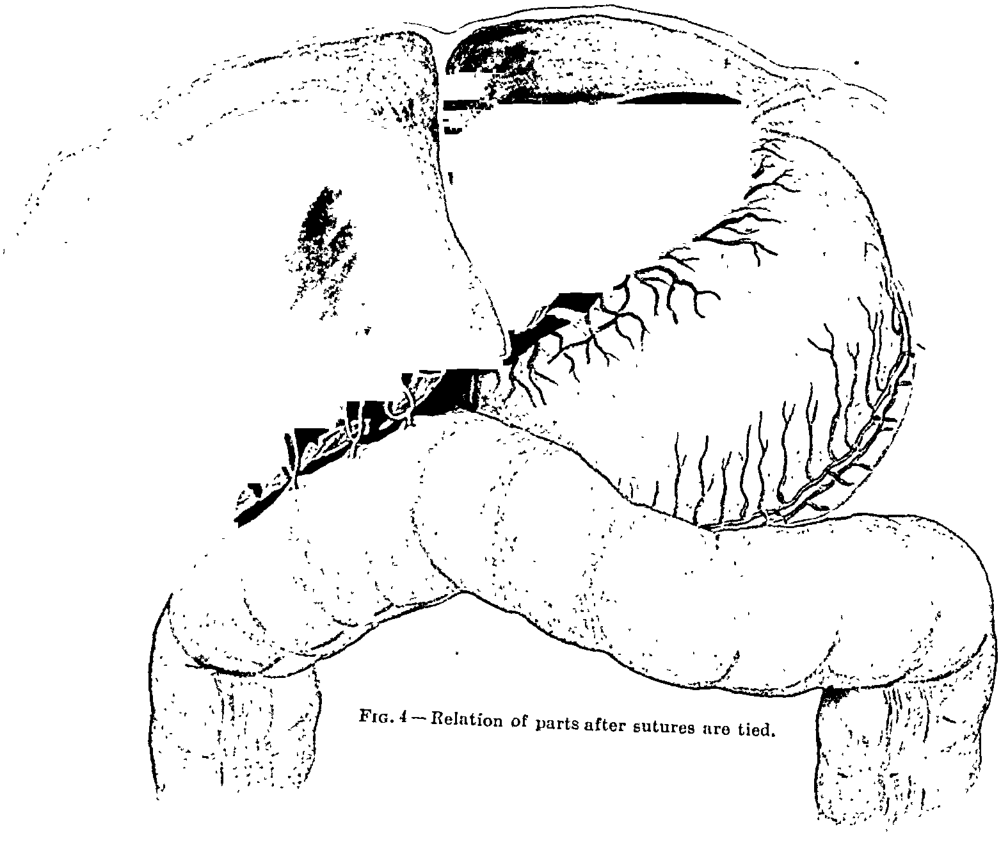


Fig. 4 — Relation of parts after sutures are tied.

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Original Articles

COLOHEPATOPEXY OR COLON SUBSTITUTION.

A NEW OPERATION FOR PERIGASTRIC ADHESIONS AFTER GALLSTONE OPERATIONS.

E. WYLLYS ANDREWS, M.D.
CHICAGO.

All postoperative adhesions after gallstone operations do not cause trouble. In many cases no pain or disturbance results from numerous firm bands uniting stomach, liver and colon. In others there are disturbances of great variety, ranging from slight dragging to severe pyloric compression, torsion of the pars pylorica, hour-glass stomach, dilatation, vomiting, and evidence of outside pressure on the liver ducts, even to the extent of causing jaundice and hepatic colic. There may even be symptoms simulating recurrence of gallstones.

With the increase of gallstone surgery, the disposal of the viscera after operating so as to avoid gastric deformation by adhesions will have to be given much more serious attention, or else a series of operations will have to be performed to relieve deformities almost as distressing as the original disease.

As adhesion building is normal to gallstone surgery, it must be ascribed to luck and accident rather than to forethought that so few of these sequelæ occur.

This risk may be understood more clearly by considering, so to say, the geography and orientation of this corner of the abdomen. There is no part of the cavity which has such invariable boundaries as the gallstone surgical field. Unlike most parts, it is not subject to the floating in or intrusion of other viscera. Its surroundings, to a certain extent, shut it off and prevent it from draining into or out of the rest of the cavity. In form it is a triangle, bounded above by the liver and appendages, below by the colon and mesocolon, and to the left by the stomach, gastrohepatic omentum and duodenum. Of course, the pylorus lies somewhat behind and partly between the colon and the liver. The triangle is a potential cavity only. As soon as retractors are introduced, the triangular form of the space is developed. This space can also be conceived as a spherical triangle, or as a pyramid, with its base on the abdominal wall, and its apex in the foramen of Winslow. The left border of the cavity is made up of the pars pylorica, pylorus, gastrohepatic ligament and duodenum in a line, having its center somewhat immovably fixed by the second portion of the duodenum.

This potential space, which I have ventured to call a "triangle," really becomes such when it has been filled with drainage tubes and gauze strips after operation. It is between the above mentioned organs and seldom any others that postoperative adhesions form. Of course, the mesocolon and the various omenta play an important part by interposing their layers. The greater omentum often rises to help fill this space, and I have sometimes encouraged this tendency by using it to cover the colon and pylorus. Either with or without such interposition, the result of operation and drainage, or of pericystic inflammation alone, is the obliteration of this "triangle." As long as the present methods of operating continue, the occurrence of these adhesions must be expected. It is not clear that it would be desirable to prevent them. They are, in fact, an end to be sought, necessary and life-saving, in all abdominal work not strictly aseptic; the only thing which makes transperitoneal drainage practicable. They are even more life-saving when perforation and pericystitis have occurred without operation, a thing much more common than was formerly recognized.

We, therefore, expect, with or without previous operation, that many cases will show the colon, liver base or edge and stomach end agglutinated into a mass around the gall tracts. It is easy to estimate that in most instances no bad symptoms are caused by these adhesions. Fortunately, most gallstone patients leave us cured. The minority which fail of relief, or are made worse, may be divided into three classes:

1. Those cases in which no stone was found; or, in other words, in which mistakes in diagnosis had been made.
2. Those cases in which some of the stones were overlooked.
3. Those cases, successful in other respects, in which perigastric adhesions and deformity appear to keep up the gastralgia.

This unpleasant minority should be studied carefully from every possible standpoint. In proportion as the adherent masses are deep and posterior, they are less troublesome, since they concern parts normally fixed by omentum and less mobile. In some cases, it is as if the gastrohepatic omentum had merely extended its attachments and been fortified by the gastrocolic or the greater omentum and the mesocolon, which had thrust themselves into the diseased area. The only effect of this is to anchor the first portion of the duodenum and colon a little more firmly than usual, while the pars pylorica is still free to rotate as the stomach distends, and no outside pressure is felt on the pyloric ring.

It is far different when the anterior wall or either curvature of the stomach becomes seriously entangled with the gall bladder, liver edge or abdominal wall (Figs. 1 and 2). We can best realize what gastric pain and functional disturbance this can produce by recalling the different anatomic relations of the full and empty stomach, as demonstrated by Symington. The empty viscus has its right end near the middle line. The distended stomach moves several inches to the right by rotating around the second portion of the duodenum, which has little motion. The pylorus, he shows, moves more than the duodenum, and the pyloric part of the stomach is more movable than either. In other words, the full or dilated stomach rises into the cupola of the diaphragm and then rotates until the pylorus is pushed over against the gall bladder. The pyloric end of the stomach then overlaps the less movable pylorus, forming the so-called antrum pylori of Schaefer and Symington. It finally takes such a position that what was the anterior wall faces, first, outward, then even posteriorly, lying in contact with liver and gall bladder in a wholly new relation. It is when adhesions form in something like this right-sided relation that I have found gastralgia and loss of function curable by operation. On the other hand, when adhesions form chiefly between the colon and gall passages, or liver edge, no matter how dense and wide they are, I have never known of any trouble to result from them.

Lauenstein[1] gives some drawings of these adhesions to several viscera.

Since writing the foregoing I have seen the short but interesting paper of Dr. Robert T. Morris[2] on what he calls "gall spiders" or weblike adhesions around the gall tracts after inflammation, e. g., cholecystitis, gastroduodenitis, diaphragmatic pleurisy, etc. Morris lays stress on the factor of dragging on the great sympathetic ganglia. He also attributes cases of mucous colitis and diarrhea to colon adhesions. He advocates the breaking up of these adhesions and the use of Cargile membrane, or aristol powder, to prevent them from reforming. The paper shows great insight and cleverness in a new direction.

My own conclusions, based on five operations, are rather at variance with this. I have already stated that I regard postoperative and preoperative adhesions as necessary and desirable. In a great number of gall-tract adhesions between liver, colon, gall bladder and duodenum, I do not recall any instance of angulation of the cystic duct or apparent dragging on the sympathetic ganglia, nor any of mucous colitis due to bands. The trouble I have seen has always been from gastric disturbance, and then only when the anterior wall or one border beyond the pylorus became involved.

I also differ entirely with Morris regarding the technic of removing these adhesions. I have no faith at all in Cargile membrane or in aristol to prevent their reforming. There is, in fact, no problem more difficult to me than that of breaking up large adherent areas between liver, colon, stomach and pylorus, and then preventing their reunion.

My own solution is not to try to prevent them, but simply to let them readhere in a more advantageous relation.

In each of the cases given below, the stomach was the organ deformed, and in the same manner each time—by too extensive union to the liver. The problem, on opening the abdomen, was not so much how to release the adhesions as how to prevent their reforming in the same position. While it is true that long bands can be cut and not reunite, flat or broad adherent surfaces must grow firmly together if left in contact. The interposition of anything like foil or membrane will only increase the density of these adhesions, just as gauze packing does.

It is in our power, nevertheless, to rearrange the position of these three movable organs so as to exclude any one of them and to make the union chiefly between the other two. Thus the stomach can be released entirely from the liver false attachment at the expense of the colon, which will then take its place and become adherent to the liver adhesions.

The operation I now practice is precisely this, substitution of the colon for the stomach after the latter has been dissected from the liver, and might be called colohepatopexy or colon substitution. I employ sutures to maintain it in this new and false, though harmless, position. As this technic has been evolved from several tentative efforts, and has worked admirably in curing the stomach distress, I feel like advising it in all similar cases. Doubtless cases of bands or of Morris' "gall spiders" may also be met, and may be treated by simple division, as he suggests. I have not seen many cases except of the stomach type, and in those I do not think anything but colon transposition will give relief.

1. Incision about the middle of the right rectus or nearer the middle line if an old scar is to be avoided. Plenty of room is required.

2. Careful study of the shape, position and mobility of the stomach will disclose in a typical case numerous short bands or a broad connection uniting the liver edge and a large part of the pyloric end of the stomach, as well as the lesser curvature or anterior wall. In Case 3 (Fig. 2), the attachment of about an inch of the greater curvature caused a degree of hour-glass contraction at a point two inches from the pylorus. In the other cases. the union was between broad surfaces from the gall bladder to the middle line.

3. The most careful separation of the liver from the stomach should be made, and, if necessary, the liver tissue rather than the stomach wall cut and lacerated in the dissection. Bleeding can be checked by hot sponges in the usual way if ligatures are not applicable. The pylorus should be examined by invaginating between thumb and forefinger, to demonstrate that gastroenterostomy or pyloroplasty is not needed.

4. It will be found that the separated viscera will fall back into intimate contact, and that there is no safe way of drawing the stomach to the left and anchoring it. The transverse colon is, therefore, pulled up with any loose omentum which is present, and thrust into the space between liver and pylorus. This is not so much of a displacement as might be supposed from a written description. The bowel is not rotated and does not cross over the stomach, but only forces it toward the right. It is practically the same position which the hepatic flexure assumes after gall-tract adhesions in average cases. To hold the colon in this new relation, its omenta are stitched to the gastrohepatic ligament, liver surface, or such adhesions as form the angle between pylorus and liver. With ordinary care, tissue can be found to sew to without endangering the ducts or large vessels of the liver or of the bowel wall. The more loose omentum can be interposed the better. Of course, a colon suspension incidentally is done here, which cures at the same time any prolapse of the stomach which may be present.

In the following cases the patients have been operated on by this method:

Case 1.—Mrs. H., aged 43, was operted on for gallstones November, 1904, by Dr. McArthur. She was greatly improved as to colic and icterus, but returned for gastric distress, most severe after eating, with some atacks of vomiting and constant sense of weight in epigastrium.

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[1] Int. Surg., p. 367.

[2] Medical Record, March. 25, 1905.

Operation.—Laparotomy, Jan. 18, 1905, showed dense adhesions between the pyloric part of stomach, including about one-third of the lesser curvature and the liver edge for three or four inches. The gall bladder fundus seemed covered by and adherent to the stomach. The liberation of the stomach was somewhat tedious. After drawing it away from the liver it would immediately fall back in contact when released. The colon, which was nearly free, was drawn up and held against the denuded liver surface by three catgut stitches, one of which was deep and included some of the gastrohepatic omentum.

Result.—Complete relief of gastralgia and digestive trouble followed at once, and the patient made a rapid recovery. She has since had no recurrence of gallstone or stomach trouble.

Case 2.—H. S., male, aged 29.

History.—Three years ago he had a gallstone operation, performed by Dr. Frank T. Andrews. He has remained free from hepatic colic, but gradually has acquired a form of gastric functional disturbance, causing dragging pain, anorexia and pain after eating.

Operation.—The operation, February, 1905, was identical with that in Case 1. Less trouble was found in releasing the adhesions, which were mainly between the anterior and upper border of the stomach and the edge and under surface of the liver. The colon was made to take the place of the stomach by attaching it to the denuded liver.

Result.—Permanent relief followed this interference.

Case 3.—H. T., male, aged 33.

History.—Dr. Davis referred patient for chronic gastralgia and dragging pain. No splash or typical signs of hour-glass stomach were present. There was absence of organic acid and normal free hydrochloric acid. He never had boring pain, bleeding or hyperacidity. There was no history of cholecystitis. No operation had been performed.

Operation.—On abdominal section the main adhesions were found between the upper border of the stomach and liver border for about three inches. The greater curvature was also attached by a band at one point about three inches from the pylorus, and thus looped up, constricting the stomach at that point. The colon substitution was performed February, 1905, and the patient had entire relief as long as he was under observation.

Case 4.—Mrs. T. O., aged 57.

History.—The patient has had numerous attacks of cholecystitis, with sepsis, during two years; no jaundice or true colic. There has been some constant pain in the gall-bladder region and in the right shoulder. I removed the gall bladder, which was greatly enlarged, November, 1903, finding no stones. Periodically since then and for the past six months constantly there has been dragging pain, anorexia and occasional vomiting.

Operation.—Operation showed pylorus immovably fixed to liver, gall tracts and colon by firm union of flat surfaces, but no long bands which could be cut. After stripping and dividing these adhesions, the pylorus and stomach were pushed well to the left, and the colon lifted up and anchored between them and the liver by its omenta.

Result.—Immediate relief was obtained, which continued for the three weeks she remained in the hospital. I have not had a report since.

Case 5.—Mrs. O. D., aged 36.

History.—Two years previously she had an operation for pelvic disease, appendix removal and gallstones at one time, by Dr. Graham at the Presbyterian Hospital. One year later she began to have pain in epigastrium, generally after eating. She would vomit partly digested food. There was no blood or bile in vomitus. She had acid eructations and some pain radiating to the right shoulder blade. Drugs, lavage and diet regulation gave slight relief. There has been, since first operation, no icterus or biliary colic, and no tumor or soreness over the gall bladder.

Operation.—May 30, 1905. An incision was made through the old scar, the usual gall-bladder incision, about four inches long. The omentum was adherent all along the old scar; the adhesions were quite firm and dense all through the right hypochondriac region and around the gall bladder, and extended posteriorly along the ducts. One distinct rope-like adhesion, which was very firm, drew the anterior stomach well over to the gall bladder and upward toward the liver. This adhesion twisted the pyloric end of the stomach and the organ was dilated considerable; palpation showed no pyloric obstruction. The gall bladder had been sutured to the peritoneum in the previous operation. It was hour glass in shape and contained three stones the size of a pea. The coats of the viscus were slightly thickened and inflamed.

Technic: Adhesions were broken up or ligated and cut, the rope-like adhesion drawing the stomach to the right was freed. The gall bladder was opened and the stones removed. They were soft like putty. To prevent the stomach from again becoming adherent to the gall bladder the transverse colon was drawn up (the stomach being pushed to the left), and sutured between the gall bladder and stomach under the liver. Three catgut sutures were used. Omentum was also spread over the old adhesions and the abdomen closed in the usual manner. A Mayo drainage tube was put in the gall bladder with pursestring suture of catgut.

Result.—A marked relief from vomiting and stomach distress was obtained at once. The patient on one or two occasions had vomited after improper eating without permission, but is quite relieved of the old distress.

In all these cases, gastric lavage was first tried ineffectively. The symptomatology was fairly distinct, because of the history of gall-tract inflammation or of operation, the prominence of pain, and dragging sensation, and the absence of hyperacidity or signs of pyloric obstruction. I debated the propriety of gastroenterostomy as a remedial measure in each of them. It is possible that such a drainage would have done good, but probably less good than the method used.

CONCLUSIONS.

1. Gall-tract adhesions are inevitable after disease and operation.
2. They are beneficent, harmless and symptomless in all but a few cases.
3. These few represent malposition rather than trouble from adhesions *per se*.
4. The colon, gall bladder, duodenum and pylorus can adhere to each other without impairing their function. The other parts of the stomach cause trouble if involved.
5. Such adhesions will reform when separated, unless the colon be substituted for the stomach.
6. The causing of colon adhesion to the liver does not disturb its function perceptibly.
7. Probably certain vague gastric disturbances have been treated by gastroenterostomy when the patients would have had more benefit from this operation.

THE TREATMENT OF EMPYEMATA OF THE MAXILLARY SINUS THROUGH THE NOSE.*

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The questions of etiology and differential diagnosis are considered in this paper only so far as they have direct bearing on the proper treatment.

ETIOLOGY.

Empyemata of the antrum may be divided etiologically into two classes.

In the first class are those cases which originate in diseased processes in the tooth roots or which occur in connection with and as a result of pathologic processes around the tooth roots and are said to be as a whole cases of dental origin.

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In the second class of cases, which increasing experience is showing us to be much the larger of the two, are those empyemata of the antrum due to nasal conditions. The epidemic form of influenza known as grip, is by far the most common cause of the acute empyemata, whereas old, long-continued inflammations, ethmoidal or frontal, or any other nasal cause which interferes with the natural drainage of the antrum through its natural or acccessory openings, are responsible for the chronic cases.

DIAGNOSIS.

This must be made with reference to the etiology, as far as it can be determined. Exploratory puncture with the trocar beneath the inferior turbinate is the simplest method of determining the presence or absence of pus. A study of the nasal conditions and a study of the tooth conditions will usually determine which factor is the one at fault. It will often be found advantageous in cases of doubt to have a consultation with a dentist.

TREATMENT.

Originally, nearly all antral empyemata were drained through a tooth socket and the entire after treatment kept up through the opening which resulted from the extraction of the tooth, with the result that many patients were compelled to wear tubes of various sorts, rubber, gold or silver, for varying lengths of time, weeks, months or even years. As this treatment failed in a large majority of instances, the next operation which came into vogue was the more radical one of opening through the canine fossa, removal of the mucous membrane of the antrum with thorough inspection of the cavity, accompanied with a counter opening into the nose and the immediate or subsequent closure of the canine fossa opening. This procedure effects cures but in many instances is probably a more extensive operation than is absolutely necessary.

In recent years, many rhinologists, finding that the washing out after exploratory puncture underneath the inferior turbinate, when continued for a certain length of time, not infrequently effected cures, especially in acute cases, have been led to study more thoroughly the possibilities of treatment of these empyemata by purely nasal methods. Among these rhinologists are Freeman of Philadelphia, who published some years ago an important article on the treatment of these empyemata and introduced a trocar and canula; the chairman of this section, Dr. Myles, who has a trocar and canula for perforating the antral wall; Mikulicz, Curtis, Claoue, and the secretary of this Section, Dr. Freer. I have been using this method for several years, having been led thereto as a result of trying Dr. Freeman's method some years ago, which, though imperfect as to its instruments, was still a step in the right direction.

There is a large class of cases of empyemata of the antrum in which the antrum is merely acting as a reservoir for pus and in which the antral mucous membrane is not of itself particularly degenerated. Such cases are especially adapted to treatment through the nose, which is the natural drainage point of the antrum. The mouth is an abnormal drainage point, and any opening from the antrum into the mouth is in constant danger of being infected from the mouth, no matter how thoroughly clean it may be at the time of operation. Whenever it is necessary to make such an opening, as in cases of simple empyemata of dental origin or after the radical operation through the canine fossa, an endeavor should be made to close it as soon as possible and permanently to separate the cavity of the antrum from the cavity of the mouth.

In the presence of antral disease the course of procedure should be somewhat as follows: If the infection is of dental origin the tooth should be extracted and the infection treated. The opening should be allowed to close as soon as possible. In the presence of symptoms not suggestive of dental trouble or when in doubt as to the origin of the antral disease, an exploratory puncture should be made high up underneath the inferior turbinate at the junction of its middle and anterior thirds or over the inferior turbinate near the natural orifice of the maxillary sinus. A curved canula, with or without trocar answers very well for puncture underneath. The only point to be especially noted is the exact point at which to enter the trocar. In ordinary shaped faces the junction of the anterior and middle thirds of the inferior turbinate answers very well. In patients in whom the malar bone is set rather far back on the face and the nose is relatively long, one should go a little further back, as otherwise there is some danger of perforating a little too far forward and even of entering the cheek. The right-angled, sharp trocar needle of Killian does very well to make an opening for diagnostic purposes. It is entered in the middle meatus just above the line of the inferior turbinate, where the bone is usually very thin. I generally use a stout, bevel-edged needle trocar, or that of Killian. The antrum is then washed out. The next step in the treatment is to continue this washing out of the antrum for a few days and see if it will not be sufficient to effect a cure. The opening can be readily found with a curved Eustachian catheter slightly smaller than the caliber of the trocar canula, or the same instrument can be introduced each time the antrum is washed out. The pain of this procedure is very little when a 20 per cent. solution of cocain combined with adrenalin is used.

If discharge of pus still continues, simple washing through the small opening will probably be insufficient. A probe passed through the opening will give some information as to the character of the antrum. If the cavity seems large and roomy and the mucous membrane does not feel particularly boggy, the presumption is that a cure may be obtained by simple washing. If at the end of a longer or shorter time, a week or more, the simple washing is followed every day by discharge of pus, not diminishing much in quantity, it becomes evident that better drainage must be obtained. The next point is to enlarge the opening into the antrum sufficiently so that it will remain open during the required time of treatment. The naso-antral wall is thinnest just above and just below the insertion of the inferior turbinate, while thickest on the absolute floor of the nose. It is desirable to get the point of drainage at the lowest possible point since in the main the patient maintains the head in the erect posture and the drainage is therefore the better.

The question then arises whether to make it above or below the inferior turbinate or to remove the anterior portion of the inferior turbinate itself. Opinions differ as to which method is the most desirable. Many operators remove a portion of the inferior turbinate. It seems to me, however, that this bone has a valuable function in the nasal economy and that in nearly all instances a sufficiently large opening for drainage can be obtained underneath or above it without in any way interfering with it unless it be enormously large and swollen. My method of procedure is to introduce through this opening first a curette of about the same size as the opening and then a series of curettes, each a little larger than the one immediately preceding it, until I have a good-sized window into the antrum. As the bone is relatively thin, this can be done without much pain under the influence of 20 per cent. cocain and adrenalin solution, or powdered cocain introduced on the tip of a moist cotton swab. As soon as this window is made, I cut away backward with some form of alligator cutting forceps (I like those of Dr. Myles as well as any, or the bone forceps of Dr. Kerrison), until I have a good-sized opening into the antrum, so large that the largest size Eustachian catheter or other tube can be passed without difficulty. The opening can then be further enlarged so that the cavity can be packed with gauze, and if one has curettes of various sizes with long shanks a good portion of the mucous membrane of the antrum may be curetted.

If unable to work satisfactorily underneath the inferior turbinate, the opening can be made above that bone, and in some instances I think it would be a good plan to have an opening in each place, so as to permit of the best possible drainage. The cavity is then washed out by the physician daily, or as often as may be necessary; intelligent patients can soon be taught to introduce the curved canulæ so as to wash out their own antra.

Should the antrum show evidence of polypoid degeneration, or if the condition does not improve after a reasonable length of time under this method, any nasal operation alone will be insufficient and nothing less than the radical operation through the canine fossa and the removal of the entire mucous membrane of the antrum will bring about a cure. By far the greater number of patients who come under the care of the rhinologist can be treated through the nose.

Should there be at the same time, as I believe is occasionally the case, a tooth the point of which is in the way, I would have the tooth extracted just as if the trouble were absolutely of dental origin; but the after-treatment should be continued through the nose alone, the opening in the alveolar process being allowed to close, as drainage through the nose is so much less disagreeable than through the mouth and the after course of treatment is much shorter.

In regard to the choice of instruments, almost anything that will make an opening through the naso-antral wall will answer. Individual operators have their own choice. Whatever the physician may happen to have in his own armamentarium that will answer the purpose is a sufficiently good instrument. If one is familiar with the drill, either the small drill or the trephin drill described by Dr. Freer, or the instruments of Dr. Wells, of Washington, of which the trocar itself is a reamer, may be used. What is necessary is to make with the least pain to the individual a large opening from the antrum to the nose, as near forward as possible, above or below the inferior turbinate. If it seems desirable, the anterior end of the middle turbinate may be removed, thus making a very large opening, as described by Dr. Freer in his recent article, an opening large enough to drain thoroughly the cavity and to allow the introduction of any therapeutic measure which may be indicated in the individual case.

The choice of remedial agents for washing, etc., I do not take up. The point I am considering is a method of treatment rather than a detail.

The following cases of my own will illustrate the points which I have made:

CASE 1.—Mr. Y., aged 37, complained of catarrh, with some pus discharges for a long time. I made an exploratory puncture under the inferior turbinate and washed out through the canula several times. As the discharge of pus continued, I cut away a portion of the naso-antral wall with cutting forceps, underneath the inferior turbinate. I taught the patient to wash out his own antrum. In a short time he was well.

CASE 2.—Miss H. came to me, complaining of pus in the nose which had lasted for some time. She had a decayed second bicuspid, which was extracted; there was an old inflammation at the root, but it did not penetrate the antrum. The antrum was drilled into from the tooth socket, but this opening closed in two days. At the same time, the exploratory opening from the nose into the antrum was enlarged with curettes and cutting forceps. The antrum was washed out daily, first by me and then by the patient herself. Rapid improvement and cure followed in a few weeks. This opening has remained ever since. I saw the patient thirteen months after the operation, washed out the antrum and found it to be free from trouble.

CASE 3.—Mr. V. came to me, complaining of severe head cold. Simple methods of treatment, with washing out of the nose, were continued for some time without much result. I then punctured first one antrum and then the other, finding pus in each. I washed out the antra through the canula trocar opening without much of any result for about ten days. Then with curettes and cutting forceps I enlarged the opening into each antrum, with prompt improvement in drainage, subsidence of all symptoms and rapid cure. Time required, from two to three weeks.

CASE 4.—Mrs. B. had an attack of the grip, following which she was very weak—confined to bed. There were symptoms of pus absorption. I was called by the attending physician to see if there might not be some trouble with the nose. I made an exploratory puncture and found pus in the antrum on one side. The antrum was washed daily through the small opening for a few days, but with no result. I enlarged the opening with curettes, and daily washing for about three weeks resulted in a perfect cure and subsidence of all the symptoms indicative of pus absorption.

I do not mean to intimate that all cases of empyemata of the antrum can be cured by this method. An attempt to cure in this manner in no way prejudices any further operation, but rather prepares for that and shortens the period of after-treatment. I have had cases,[1] in which the more radical operation has been required, and I expect to have such cases in the future.

CONCLUSIONS.

First determine whether the case is of dental or of nasal origin. If of dental origin, treat it accordingly but do not continue, by tube or otherwise, a long-continued course of treatment through the mouth. If of nasal origin, treat in the manner described. If in doubt, treat through the nose, letting the tooth alone unless it seems to be troublesome. Even this method of treatment do not continue indefinitely if the pus continues to be a source of trouble, but do the radical operation through the canine fossa, a description of which does not come within the province of this paper. Lastly, see whether there is a co-existent empyema of the frontal sinus which may be draining into the antrum and keeping up the discharge of pus.

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[1] "The Relative Frequency of the Dental and Nasal Origin of Antral Empyemata." Ann. of Otol., Rhin. and Laryn., March, 1905. "The Significance of Pus in the Nose with Special Reference to the Affections of the Accessory Sinuses and Their Proper Treatment," Med. News, Dec. 24, 1904.

Professor Gerber of Königsberg[2] recently published a short but lucid article on the principles of treatment in empyemata of the antrum, which are so in accord with my own experiences in this regard that I wish to translate his conclusions somewhat freely and to incorporate them in this paper. He states that he has tried all the various methods which have been advocated and has finally come to the following conclusions, which will govern him until such time as something better may be brought forward. In dealing with diseased antra of Highmore, the following principles should govern the choice of a method of treatment:

First.—Whenever possible, direct the treatment to the point where the antrum has its natural communication with the nose, and especially avoid any long-continued direct communication with the mouth or pharynx.

Second.—In cases which are not severe, the antrum is washed out in the beginning through a sharp canula introduced in the middle meatus.

Third.—If the empyema has lasted a considerable time and the secretion is thick, with considerable odor, this opening in the middle meatus is next enlarged, the so-called supraturbinal resection of Onodi being performed, to include also the inferior meatus, if it be necessary.

Fourth.—In chronic and severe cases it may be necessary to make a large opening from the canine fossa, the so-called radical operation, but this opening, after thorough inspection and cleaning out of the cavity and the making of a broad counter opening in the middle meatus, is carefully closed and the after-treatment entirely performed through the middle meatus.

Fifth.—The only patients who can not properly be treated in this way are those in whom there is a high degree of nasal stenosis, rendering this treatment impossible, and those who will neither continue in daily communication with the physician nor learn to apply themselves the after-treatment through the nasal fossa.

DISCUSSION.

Dr. Otto T. Freer, Chicago, said that the intranasal operation for empyema of the antrum needs a champion, as most men are in favor of operating by the alveolar route. Dr. Freer thinks that the intranasal operation advocated by Dr. Richards and himself is the most rational one and that it will soon displace all others for the relief of chronic empyema of the maxillary antrum. He said that the trend of late years has been to employ the Caldwell-Luc method of operation through the facial wall of the superior maxillary bone but that this is a far more formidable operation than the intranasal one, as it includes a long incision severing the lip from the alveolar process, an opening in the thick bone of the upper jaw in front, the need of a general anesthetic, and the making of an unnatural opening between the antrum and the oral cavity; besides the usual shock and pain caused by a severe operation. In the majority of cases, he said, the result is no better than that obtained by opening the antrum by the intranasal route, while the latter operation inflicts much less injury on the patient. He agreed with Dr. Richards that the opening through the nasal wall may be made of varying sizes, from a mere puncture with the trocar to the removal of nearly the entire inner wall of the antrum. Dr. Freer's technic includes the use of an electric motor and should this for any reason fail to work, the operator could fall back on Dr. Richard's method, for a combination of the best features of both ways of operating will probably give better results than either alone. Dr. Freer has never seen bad effects from the removal of the inferior turbinated body, though he has often heard them suggested. He has frequently removed the lower one-third of the lower turbinated body and has not encountered the permanent crusting and scabbing supposed often to follow this reduction in size of the turbinal, nor has he encountered rhinitis and pharyngitis as a result, and he does not think that the lower turbinated body is as physiologically important as it is supposed to be. For this reason he does not hesitate to resect its anterior two-thirds in performing a radical opening of the antrum through the nasal wall. Resection of the inferior turbinate is also a part of the Caldwell-Luc method and its followers do not speak of bad results following. The Wells rasp seems to Dr. Freer to be a good instrument, for in ordinary mechanical work he has found that a rasp cuts nearly as well as a saw. When the empyema of the antrum is not yet chronic, and when there is but a moderate purulent or seropurulent discharge, the middle meatus offers sufficient access to the antrum and an opening here may be made with the greatest ease. Onodi enters the antrum in this place with a forceps-trocar, whose blades he spreads to make a preliminary opening. This opening he then enlarges to nearly the size of the meatus.

Dr. W. S. Bryant, New York, stated that he puts most reliance on opening through the middle meatus alone, removing if necessary part of the middle turbinate. He uses a probe to locate the natural opening and follows that with a curette, after which he uses one of the angle punches and takes out as much bone as is necessary. The quantity of bone to be removed is in proportion to the bad condition of the mucous membrane, according to whether the drainage must be absolute or need be only relative. After a sufficient opening is made, washing is unnecessary.

Dr. Gardner Perry Pond, San Francisco, said that he has been very much interested in this subject because of Dr. James G. Sharp's work on the accessory sinuses. Dr. Pond has been an advocate of the nasal route and Dr. Sharp of the canine fossa route. As an argument in favor of his method Dr. Sharp quotes the relative frequency with which a double cell is found—the antrum divided by a thin bony wall. In such cases the cell nearest the nose may be opened with the cannula and the operator may not suspect the existence of the other cell, consequently there will be no relief of the symptoms. If, on the other hand, the antrum be opened through the canine fossa, and the opening be made large enough to admit a finger, it can easily be determined whether or not there are two cells. Dr. Pond stated that there is no doubt in his mind that the best drainage is obtained through the floor of the antrum and said that he can see no reason for choosing the middle meatus as a route for entering that cavity.

Dr. L. C. Cline, Indianapolis, stated that he has had considerable experience in the treatment of these cases, particularly some time ago when there was a great deal of grip in the country. Each case is a law unto itself, and that must be remembered in operating. In the old neglected cases a radical operation is necessary; in the subacute or chronic cases of short duration, recovery will often take place if the opening is made through the alveolar process. Dr. Cline does not believe in cutting away the turbinated body unless it is necessary. Drainage is necessary and to get good drainage the anatomical relations in these cases must be borne in mind. Different skulls show marked variations in the size of the cavities. Dr. Cline has often practiced making an exploratory puncture in order to measure the distances. If the tooth is out—and often it is better that it should be out, because so often it is diseased—then it is easy to make a puncture with a sharp drill. Then he cuts with the burr in various directions. This enables him to examine the cavity for polypoid conditions and to determine whether or not a radical operation is necessary. It is a simple procedure. The field can be cocainized and the work done without general anesthesia. Dr. Cline does not believe in making an opening between the superior and the middle turbinated bodies, because then drainage can be obtained only with difficulty. With good drainage and cleansing, these patients, as a rule, will recover.

Dr. C. F. Welty, San Francisco, declared that these patients can be cured by one of these various procedures, so that the question arises as to which one of the routes shall be selected as the best. This can best be done by studying the individuals. The question naturally arises, which does the least harm to the patient. Dr. Welty is firmly convinced that least harm is done by the alveolar route. He has never seen any harm follow the removal of the anterior half of the inferior turbinate, however, but his experience, he said, is limited. All the patients he has operated on by that method have recovered completely. When operated on by the alveolar route they have not recovered so readily. Radical procedure cannot be determined on absolutely until some of the more conservative measures have been used and have failed. Sometimes puncture will cure the patients. Dr. Welty has seen a number cured by a single washing out through the inferior meatus. Hajek is a great believer in the alveolar route. About two years ago he began to use the inferior meatus route. Dr. Welty does not know with what ultimate results. The route by the middle meatus should be condemned from its anatomic relation.

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[2] Archiv. für Laryngologie and Rhinologie, vol. xvii, part I.

Dr. W. S. Anderson, Detroit, Mich., said that if possible, he should always try to save the inferior turbinated body.

Dr. S. L. Ledbetter, Birmingham, Ala., said that the question arises as to whether a given case is chronic or acute. In all the acute cases, he has found that the patients get well readily after a small puncture and one or two washings. The dentists in his section of the country get the majority of the acute cases; the patients go to them because they have some trouble with the teeth. In the chronic cases, when the lining membrane is diseased and in which there is often a polypoid condition present, recovery may not be secured by simple washings. These patients require the application of some remedy that will destroy the diseased condition of the sinus. This cannot be done without an opening sufficiently large to enable the physician to enter the cavity, which is not always regular and smooth, and to reach all the different portions of that cavity with a probe or applicator. Dr. Ledbetter does not believe that all the points can be reached as readily through the nose as through the canine fossa.

Dr. A. G. Greenstreet, Seattle, Wash., declared that the opening above the inferior turbinated is often referred to, but that very few advocate that route. He saw a case recently in which nature had performed a successful operation by that route. An old man had been suffering for several nights. When he consulted Dr. Greenstreet one side of his nose was full of pus, and in wiping the pus away Dr. Greenstreet got into the antrum above the inferior turbinate. The opening was a large one, so that he could swab the pus out of the antrum. Under antiseptic irrigations the patient was cured up in a short time. It seems to him that in many cases that might be a good route to adopt, for it obviates the necessity of resecting the anterior third of the inferior turbinate body.

Dr. DeVilbiss, Toledo, stated that in long standing cases a radical operation is needed. The cases in which the accessory sinuses are involved are those that have tried his soul the most. In acute cases an exploratory puncture for diagnostic purposes, with simple drainage may be all that is necessary, but in those cases that have lasted for a long time, in which there probably is disorganization of the tissue, whether the operation be through the canine fossa or through the inferior meatus, an opening should be made large enough to permit the introduction of the little finger. If the antrum is found to be in fairly good condition in a case of long standing, the physician should look to the sphenoidal sinus, the ethmoid cells and the frontal sinus. He mentioned a case in which Dr. Myles operated through the nose and the patient did well, but Dr. DeVilbiss usually operated through the canine fossa. He elevates the lip and with a hand trephine bores through the canine fossa and then uses a rasp or drill to enlarge the opening.

Dr. J. H. Martindale, Los Angeles, said that the views held in the different parts of the country seem to give these cases different interpretations. In Los Angeles he does not have an opportunity to treat acute cases, for in southern California there are few such. The cases he has are chronic cases, and in these cases he prefers to enter through the alveolar region if a tooth is absent or through the canine fossa if a tooth is not absent. He does not object to a permanent opening. The opening should often be large enough to permit the introduction of the little finger. It is of no importance, practically, whether the antrum be converted into a part of the oral cavity, provided it can be thoroughly washed out. The method advocated by Dr. Richards, he said, is probably of very great value in a climate where acute cases occur frequently, or where an exploratory operation may be required.

Dr. Robert C. Myles, New York, said that this subject is intensely interesting to him from a purely scientific standpoint, since he has operated in the last fifteen years by every method that has been suggested. He believes that the antrum of Highmore should not be treated after the ordinary rules of surgery. There are thin walls covered by thickened mucosa, and the general surgeon, following the ordinary rules of surgery, would advise curetting thoroughly. Dr. Myles claims that by curetting a worse condition than before is brought about. The normal mucosa is destroyed and part of the periosteum, and there is a large opening into the mouth. A new membrane can not form very soon. If curettement has been as thorough as many writers direct there is practically nothing left. The opening will contract before there is complete obliteration, and all who have tried obliteration of the cavity have abandoned it. A large opening into the nose is frequently made in these cases and the opening in the mouth allowed to close up. So there really is no radical operation. Any operation that leaves a pus cavity in an accessory sinus is not a radical operation. Dr. Myles would endorse the mildest operation that gives the best results, and that operation is a part of the so-called radical operation. The removal of the nasal wall of the inferior meatus is the most essential part of any operation on the antrum of Highmore. He has practically abandoned operating in acute cases because these patients rarely need operation; all they need is an opening to relieve the pressure from the fluid and the gas. Cases frequently become chronic because the pressure is not relieved and sloughing occurs. Dr. Myles presented two small chisels that he has found most satisfactory and simple for opening the antrum.

Dr. George L. Richards said that it seems to him that the dental engine is an instrument that is destined to go out of use rather than to increase in popularity. It is difficult to work in the nose with the large wobbly, flexible shaft. He has used the straight instruments that Dr. Freer describes and the antrum with them can be opened. If an instrument will do the work, the simpler it is the better. Dr. Richards does not recommend the dental engine. Often the operation must be done away from electricity and where it would be difficult to carry a foot-power instrument. He recalled a case in which the patient was nervous and dreaded the coming of a second man who might have surgical propensities. In that case Dr. Richards was able to get into the sinus without the patient hardly knowing that anything but a nasal examination had been done. The instrument that he almost invariably uses for exploratory purposes is a medium sized beveled steel cannula which may be pushed in with the finger or in some cases may require a tap with the mallet. If the gas pressure be gotten rid of the patients often get well of themselves. However that may be, even in the very acute cases a puncture under the inferior turbinate and washing out with some simple antiseptic solution will lessen the severity of the attack. The curved instruments of course go in more easily than the straight ones. Dr. Richards had some difficulty in maintaining the opening, but with the instruments which Dr. Myles has shown he does not anticipate any trouble in the future. With the beveled instruments one does not get out sufficient tissue. Even in the acute cases it may bother the operator to introduce the cannula. In such cases, Dr. Richards simply reintroduces his bevel edge cannula. Opening in the middle meatus, he said, is easier than the puncture under the inferior turbinate. In most instances he has preferred making the opening in the inferior meatus. If the point of opening be selected with reference to the conformity of the face, the operator will find it somewhere between the first and second thirds of the inferior turbinate, carrying the instrument as high up as possible, he will go through a very thin wall. Sometimes it is necessary to go as far back as the second third. It must be remembered that at times there may be great variations. An idea of the anatomic construction of the antrum can be obtained by noticing how the teeth grow and by taking note of the palatal arch. Now and then there is an almost complete septa between the antra so that one cavity might be entered and not the other. Dentists must be instructed concerning the nasal side of these cases, and they can instruct physicians as to the dental side. It does not seem to Dr. Richards that the dental route is the better. The patients who may be treated through the alveolar process may be treated better through the nose. An opening through the mouth is abnormal and the alveolar opening always tends to close. The patients treated through the mouth continue coming to the clinic for a long time. He does not think many American patients would care for such an operation. In his district most patients would prefer to have a little purulent discharge through the nose, rather than to have a so-called radical operation. In reply to a question, Dr. Richards stated that the radical internal method is not indicated in cases in which there is mucoid or polypoid degeneration, though it may give a certain amount of preliminary information. As a diagnostic measure the opening can be made through the nose. In acute cases, recovery usually follows the relief of pressure. In cases complicated with empyemata of the ethmoidal cells or of the frontal or of some of the other sinuses, he would make the opening under the inferior turbinate. If the patient seemed to have insufficient drainage, he would enlarge the opening. If the inferior turbinate lies in such a way that it folds right over the antral wall so that sufficient room cannot be obtained, part of it may be taken off. Again, the front end of the inferior turbinate can be taken off. The cases must be individualized. In a case with comparatively smooth walls and comparatively uncomplicated, drainage and washing will usually suffice. It does not matter so much how long these cases have lasted; more depends on the character of the pus and the condition of the mucous membrane. In cases with polypoid masses, it is better to operate through the canine fossa, unless the instruments presented by Dr. Myles will enable the operator to get sufficient drainage in these cases.

Dr. Otto T. Freer, Chicago, said that he thinks that Dr. Richards has been a little unjust to the dental engine. The handpiece may be disinfected and he should not like to give up the use of so valuable an instrument merely because it can not be cleaned like the implements used for a laparotomy. Dr. Freer certainly has never seen sepsis follow his frequent use of the nasal burrs and trephines. The long burr cuts away the strong ridge left at the bottom between the nasal floor and floor of the antrum, after resection of the upper part of the nasal wall of the maxillary sinus, in a way no other implement can, so that the nasal floor shelves down into the antrum and drainage becomes as nearly perfect as possible. The trephine also perforates the nasal wall with great speed in several places and causes practically no pain. After the trephine the burr may be used to enlarge the opening.

METHEMOGLOBIN AS A FACTOR OF CONSERVATIVE METABOLISM.*

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DEFINITIONS.

Hemoglobin (Hb) is a crystallizable body which constitutes the largest portion of the colored corpuscle. It is a respiratory pigment, has the power to attract oxygen and also other gases. (Kirk.)

Hemoglobinemia is a condition in which the hemoglobin is dissolved out of the red corpuscle and is held in solution in the serum. (Gould.)

Oxyhemoglobin (O_2Hb) results when hemoglobin is united molecule for molecule with oxygen. It is the characteristic constituent of the red corpuscle to which the scarlet color of arterial blood is due. (Gould.)

Reduced hemoglobin is the result of deoxidation of oxyhemoglobin. (Gould.)

Methemoglobin (Met Hb) is a modified form of hemoglobin. It is the product either of incomplete decomposition of hemoglobin or of its excessive oxidation. The oxygen is more firmly combined in it than in oxyhemoglobin. (Gould.)

Methemoglobinemia is the presence of free methemoglobin in the blood. (Gould.)[1]

To the physician of to-day, methemoglobin, because it is known to be a more stable oxygen compound than oxyhemoglobin and is capable of reduction by the tissues only in slight degree, is universally regarded as a blood change deleterious to the organism, or, otherwise to express the equivalent, methemoglobinemia is always an intoxication, be it great or little in degree. It is amply proved that if methemoglobin be present in the blood in sufficient amount death results. Nevertheless, I differ from accepted opinion in so far as to say that methemoglobinemia must not be regarded as invariably deleterious to conservative metabolism, and that, in fact, therapy empirically makes use of this blood change to aid in conservation of nutrition. The following is offered in support of this opinion:

The toxicologist, Selmi, used the word ptomain to describe certain alkaloidal bodies formed during the process of animal tissue putrefaction. Herein the name derived from the Greek word signifying cadaver was appropriate enough. Gautier applied the name leucomain, from the Greek term signifying white of egg, to basic substances preformed in the body tissues or which are products of living tissue metabolism. This distinction, it was found, could not stand. Because putrefaction and normal digestion are practically identical processes, we are not surprised that some of the basic substances originally obtained from putrefying animal matter can be isolated from living protoplasm, both animal and vegetable. More than this, enzymes or unorganized ferments and dilute mineral acids are capable, as well as bacteria, of producing ptomains when acting on the nuclein molecule. These facts enable us to draw conclusions from findings in reference to such basic substances without regard to the usual dual classification. Concerning this argument, however, so much may be said as to their differentiation. The interdependent relation, as based on chemic formulæ, of some of these basic substances (leucomains) to others of the same class and their final elimination products, has been identified with successive oxidation and cleavage processes, as, for instance, those of the best known purin group, form a continuous oxidation series with uric acid as the final product from which urea may be attained by cleavage. Much less is known of antecedent and also of oxidized elimination forms of representative ptomains, such as cholin, muscarin, putrescin, etc., although, as a general proposition, the sufficient oxidation of these basic substances is known to render them innocuous. For the same reason, the relation in general between oxidation of metabolic products and pathologic reduction of red cells hereinafter considered, is clearer as regards the leucomains than the ptomains, although a like need for the oxidation of the latter remains no less obvious.

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* Read in the Section on Pathology and Physiology of the American Medical Association, at the Fifty-sixth Annual Session, July, 1905.

[1] This definition given because as complete as any attainable, nevertheless does not convey the entire meaning of the term methemoglobinemia as used in this article. In experimentation on animals it has been found that an induced blood change from oxyhemoglobin to methemoglobin, in most cases, if not always, takes place within an intact red cell, disintegration occurring later, and hence we obviously may have a methemoglobinemia before the methemoglobin becomes free and reaches the plasma.

As clinicians, we are interested in the connection which retention of these basic substances may have to disease—a factor often recognized, at least, in general terms. C. E. Simon[1] says "both classes of substances (i. e., ptomains and leucomains) are of especial interest to the physician, as their formation or undue accumulation in the body may give rise to serious disturbances." Vaughan and Novy[2] state "the leucomains have been credited by many as playing the chief rôle in autointoxication," and, again, "Wiener's observations on uric acid show that the purin body is not only a nuclein cleavage product, but that it may also be a synthetic one. Furthermore, he has shown that uric acid is not only being made, but is also being constantly destroyed within the body.[3] The process of formation and decomposition results in the normal minimum excretion of uric acid. If, however, the latter change be diminished or inhibited, the amount of uric acid becomes apparently increased and may lead to disease conditions, such as rheumatism. The same view may be extended to the purin bases and the relatively large elimination of these bodies in leukemia may be due not only to increased formation, but also to decreased destruction."

As regards specific blood observations, Prevost and Dumas have noted an accumulation of urea in the blood where it failed of elimination by the kidneys.[4] and, according to Gschleiden, an accumulation likewise occurs in fever. Salomon found uric acid in the blood in demonstrable amounts in cases of pneumonia and fever. von Jaksch obtained blood by cupping from 102 persons, of which only a few were in health, and tested it for uric acid. He detected no uric acid in the blood of the healthy, but found it in varying amounts in the blood of patients who, as a result of heart lesions, of pneumonia, nephritis or anemia, were suffering from dyspnea. The same investigator detected xanthin bases and uric acid in exudates and transudates and also the former in the blood in various pathologic conditions. According to von Limbeck,[5] xanthin bases (i. e., purin bases) have been found in the blood in various diseases by Sherer, Mosler, Salkowski and Salomon. von Jaksch interpreted the accumulation of uric acid in the blood in dyspneic conditions to mean that in these occurred greatly lessened oxidation processes. von Limbeck points out that the error of this conclusion is demonstrated by Kraus, who, by comparative analyses of respired gases in cases of severe anemia as against those of healthy persons. found the coefficient, $\frac{CO^2}{O}$, to be the same in both conditions. In accordance, also, are the observations by Chvostek, Bohland and Biernacki that in simple anemia the patient, instead of using less oxygen, employs rather more than in health. A reasonable conception concerning all blood conditions which have been cited would be the following one, viz., that as a pathologic effect in a great many morbid conditions increased disintegration of tissue cells results in the increased formation of leucomains, the chief known source of which are the nucleins of the nuclei and the proteids of cell protoplasm. Also, it being established that progressive oxidation and subsequent cleavage advances the leucomains to a product suitable for body elimination or one required for further metabolism, *dyspneic conditions (without regard to clinical entity but merely as one sign of intoxication), are always manifestation of an inadequate effort on the part of the organism sufficiently to oxidize these cell disintegration products.* Or, to express the idea from a different view-point, *there is in the blood in conditions which result in increased tissue metabolism an accumulation of basic products which are prepared for further use or for body elimination by oxidation and cleavage processes, and, therefore, the same products up to the point of their sufficient preparation act as powerful reducing agents or deoxidizers.*

To one who approaches the subject without prejudice, the literature of methemoglobinemia develops some unconvincing conclusions as well as patent contradictions. He must be impressed by the fact that substances so far removed from others classed with them in physiologic effect or manner of therapeutic use as are hydrocyanic acid, amyl nitrite, iodin, turpentine, pyridin, chloroform, ether, chlorate and permanganate of potash, phenacetin and other antipyretic coal-tar products, certain toadstool and snake poisons, etc., require differentiation in the consideration of a systemic effect, even though all of these possess a common property to produce in sufficient dose a certain toxemia. He notes the statement by one investigator that before certain substances can change oxyhemoglobin to methemoglobin the hemoglobin must be freed from the corpuscle by the latter's disintegration. Another observer is equally certain that even in these cases the change to methemoglobin is primary and that the solution of the red cell occurs subsequently. If, as in this case, the same substances, as, for instance, arsenuretted hydrogen, snake venoms, toadstool toxins, be set down by a third authority as producers of hemoglobinemia only, the suspicion is born that at the door of the met compound, perhaps, are laid some of the ill effects of poisons whose paramount action is rapid solution of the red cells. It is true that disintegration of the red cell does follow methemoglobin formation,[6] and it is not surprising, for the reason that this superoxidation[7] of the corpuscle is needless in health and hence always presents an extraordinary form of hemoglobin. Yet, a legitimate question may be raised whether or not some other agent, beside that which produces the met oxidation, may not sometimes complicate the latter effect—for instance, the albumin destroying property and, therefore, destructive effect, on the red cell of potassium in the oft quoted met toxemia of potassium chlorate—a result which was manifest in experiments on herbivorous animals (rabbits); or, again, the possibility that in severe methemoglobinemia, the tissues being deprived of enough easily reduced oxyhemoglobin and unable to utilize the methemoglobin, do now attack the reduced hemoglobin, which, as we know, still contains considerable oxygen, deoxidizing it and, in turn, its derivatives up to corpuscular dissolution.[8]

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[1] Simon, Chas. E.: Text-Book Physiological Chemistry, 1904.

[2] Vaughan and Novy: Cellular Toxins, 1902.

[3] In this case, although successive oxidation is not followed by elimination, it nevertheless has played an equally important rôle in the antecedent metabolism.

[4] Baginsky holds that the amount of the purin base, xanthin normally present in the urine may be increased tenfold in acute nephritis.

[5] Limbeck, Rud. R. von., Grundriss einer Klinischen Path. des Blutes, 1896.

[6] The following are summaries of two detailed studies of fatal methemoglobinemia: Brandenburg's case, a woman 28 years old, who drank at night a solution of 525 grains of potassium chlorate in water was received at the clinic the following morning. The blood examination showed severe leucocytosis, poikilocytes, but these not numerous; also irregularly shaped large and small red cells. The blood was chocolate brown, and showed by spectroscopic examination, the bands of methemoglobin. The separated serum had a brownish tinge, contained methemoglobin, as did also the urine. Counts of red cells from the first to the seventh day demonstrated a daily decrease in red corpuscles as follows: 4.3 mill., 2.5 mill., 2.3 mill, 2.1 mill., 1.9 mill., 1.6 mill. After the fifth day no methemoglobin could be found in the serum. Necropsy following on the seventh day, exhibited parenchymatous inflammation of the myocardium, the liver, stomach mucous membrane and kidneys, the last also showing intense hemoglobin infarcts. *(Grawitz.)*

K. Ehrlich and Lindenthal's Case.—Ten hours after initial symptoms of poisoning by nitrobenzol, the blood was chocolate colored, the serum brownish. the spectral analysis showed presence of methemoglobin, which disappeared on the eighth day. Red cells were rapidly reduced, 2,275,000 on the fifth day, and falling to 900,000 before death on the nineteenth day. Poikilocytosis appeared on the third day and soon reached a remarkable degree. Polychromatic and fragmented cells were abundant. Nucleated red cells were first seen on the third day, and thereafter in very large numbers of all sizes. On the ninth day, the leucocytosis previously low, rose suddenly to 61,000, and the nucleated cells reported at 24,700. The Hb fell steadily to 40 per cent., which, with 900,000 cells was a remarkably high Hb index. There were many myelocytes among the white cells, so that at one time the blood presented the appearance of leukemia. (Ewing.)

Mohr observed six cases of benzol poisoning among workers in benzol factories. In all there was methemoglobinemia, schistocytosis and hemoglobinic degeneration, while nucleated red cells, microcytes and macrocytes were numerous. (Ewing.)

Experimental research as to methemoglobin poisoning has been largely confined to the effects of potassium chlorate, because of the overwhelming blood change which follows the ingestion of large doses of this drug and the former comparative frequency of methemoglobinemia from this cause on account of common administration of toxic doses. A brief review of such research as given in von Limbeck's work on clinical pathology of the blood is as follows:

Marchand, who first experimentally studied the toxic effect on dogs of chlorin salts, stated that the absorption of the latter resulted in a methemoglobinemia which was the cause of death in acute toxemia. Against this conclusion, Stokvis took the position, from experiments chiefly on rabbits, that death in chlorate poisoning was solely due to salt effect and that the formation of MetHb was a postmortem change. This view was apparently refuted by Lenhartz and Riess, who demonstrated methemoglobin in intravascular blood of the animal experimented on. Following these experiments, von Limbeck was able to show by volumetric computation of 0 in the blood of dogs poisoned by $NaClO_3$ that in the latter, and possibly also in man, death in acute chlorate poisoning is due to asphyxia, resulting from lack of reducible hemoglobin. How great, says this observer, is the toxic effect of the chlorate salt as such on the organism, remains an open question which, while it can not be eliminated, may be answered in so far that for dogs and in acute poisoning, this effect is probably subsidiary to asphyxia as a cause of death. For herbivera this conclusion does not hold good. Stokvis, Marchand and Bokai showed that, with rabbits, death followed acute chlorate poisoning in almost all cases without the characteristic blood change and that at least a period of one and a half hours after death needed to elapse before methemoglobin could be demonstrated in the blood. Here the cause of death could be ascribed to the effects of chlorate salts as such. There was no disintegration of corpuscles nor did this seem to occur in acute poisoning of dogs. According to von Limbeck, in subacute methemoglobin poisoning, one must reckon with a greater number of complicating conditions which include production of methemoglobin, effect of salt as such on the tissues, decomposition of blood corpuscles, circulatory disturbances due to thrombi and, as the factor of chief importance, kidney irritation.

As subacute toxemia is the only form that would have to do with this argument, we are especially interested in its several dangers—certainly each as a toxic effect is sufficiently evil. And yet, aside from mere production [illegible] which needs a 66.6 per cent. blood [illegible] if the physician as he prescribes, could not depend on his judgment to guard his patient from grave tissue change arising from injudicious treatment as regards dosage and period of drug administration, said treatment causing, for instance, great cellular disintegration of the kidney, the liver or other excreting organs, he would need to take from his drug armamentarium many important constituents of it, such as chloral, phosphorus and its compounds, bromin salts, the coal-tar antipyretics, salicylic acid and its derivatives, etc. Hence, if it then be a matter for the physician, not that he must ever avoid a methemoglobinemia as such, but that in therapeutic use of substances capable of producing this blood change, he must avoid a toxemia in his patient, we find herein quite the same problem to solve in relation to these drugs as confronts us in the use of most others we employ in treatment. And, in the same case, the practitioner must be accorded the right to produce a methemoglobinemia of non-toxic proportions if he can be [illegible].[9] I believe the patient may be, and indeed is, often benefitted by an induced methemoglobinemia effected by drugs now empirically employed, *by oxidizing through this means the suboxidized leucomains which we have found in time of disease, accumulate in abnormal amounts in the blood. These powerful reducing agents are able to take 0 from methemoglobin, although the tissues can not.*[10] In the asphyxia of extensive and, therefore, toxic methemoglobinemia pulmonary respiration is, to a great [illegible] because the hemoglobin, unreduced by the tissues, is brought to the lungs already oxygen laden. Herein methemoglobin acts as no special poison, for oxyhemoglobin returned to the lungs would give them as little to do. On the other hand, the partial asphyxia of disease, as evidenced by dyspnea and cyanosis, has as one, if not exclusive cause, *the increased amount of oxygen required by the system to oxidize the tissues plus the leucomains or other like basic reducing substances, with which need the lungs can not keep pace.*

With an induced methemoglobinemia in just that degree that may be required to sufficiently oxidize the basic substances, thereby preparing them for elimination or for further use in the animal economy, we obtain two paramount results: (1) The O_2Hb is conserved for use of the tissues. In reference to this statement, it is true that methemoglobin contains the same number of oxygen atoms as oxyhemoglobin, which point might be advanced as an argument that the leucomains could as well be oxidized by the normal oxy-compound as the met-compound. It must be remembered, however, that the oxygen of the latter is in a different form wherein the oxygen atoms are more closely bound within the molecule than in oxyhemoglobin, and therefore the met molecule requires in all probability a greater amount of suboxidized basic material for its reduction than would be needed for the loosely bound normal oxy-compound.[11]

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[7] "In apparent contradiction to the fact that bacteria are capable of converting MetHb. to Hb. is that demonstrated by J. F. Lipowski that by means of pure cultures of other bacteria O_2Hb can be changed to MetHb. In the first case we have to do with reducing, in the second with oxidizing and oxygen-forming microbes." (Rudolf Kobert.)

[8] If Co_2 be passed through a solution of oxyhemoglobin for a considerable time, reduced Hb is first formed, but if the process be prolonged, the Hb is decomposed, a precipitate of globulin is thrown down and an absorption band similar to that obtained when Hb is decomposed with acids (acid hematin) is observed. (Landois and Sterling.)

[9] But for a generation of prejudice, originating in the therapeutic abuse of potassium chlorate and which pronounces all methemoglobinemia essentially toxic, a conclusion so self-evident would scarcely need discussion, if we but remember our daily use of three of the MetHb producing halogens in the form of iodin, chlorin and bromin compounds or salts, also the coal-tar analgesics and antipyretics. That one is called on to exercise care as to dose and period of administration of this class of drugs so as to avoid pushing a methemoglobinemia beyond therapeutic limits or because *of* other possible deleterious effects there is no question.

[10] "It (methemoglobin) is, however, affected by the products formed in the blood during asphyxia, while COHb is not, the MetHb formed by the nitrites is reduced by these products to Hb, which as it passes through the lungs takes up O." (Landois and Sterling, Human Physiology, Fourth Edition, 1892.)

(2) *Some oxyhemoglobin is produced within the tissues, and herein vicarious function for an embarrassed pulmonary respiration is established.* The view that oxyhemoglobin may be furnished the organism otherwise than by the lungs may appear radical, yet apparently forces acceptance in the light of the following observations, viz., that if a careful decomposition of methemoglobin be made in glass by just enough of the reducing agent to permit the process to proceed slowly, spectroscopic examination will demonstrate the presence of oxyhemoglobin absorption lines before those of reduced hemoglobin are attained, the sequence, therefore, being methemoglobin, oxyhemoglobin, reduced hemoglobin (Jaderholm). Not only this, but the reverse is also true. If reduced hemoglobin be slowly oxidized to methemoglobin in glass, the spectroscope shows that here, too, oxyhemoglobin is an intermediate compound, the sequence being reduced hemoglobin, oxyhemoglobin, methemoglobin (Saarbruch). The similarity of chemical reaction that attends methemoglobin formation and its reduction in the experimental animal to the same procedure without the body permits us to believe that where either of the preceding reactions occur during life oxyhemoglobin must also appear as an intermediate product. *Hence, in induced, slight methemoglobinemia some of the methemoglobin reduced to oxyhemoglobin by leucomains is, no doubt, further reduced by the tissues themselves, or, again, in the course of an induced oxidation from reduced hemoglobin to methemoglobin not all of the intermediate oxyhemoglobin would attain the methemoglobin state, because of the appropriation here also of some of the former by the tissues.* This conception of methemoglobin utilization in disease, it will be noted, differs materially from earlier theory that the internal administration of potassium chlorate benefits by furnishing oxygen to the tissues in the course of its decomposition. The present hypothesis includes a series of reactions, (1) superoxidation of reduced hemoglobin or oxyhemoglobin to methemoglobin; (2) reduction of methemoglobin to reduced hemoglobin, with concurrent oxidation of reducing substances in the blood; (3) the occurrence of oxyhemoglobin as an intermediate product in course of corpuscular oxidation and reduction.

But, it may be urged, if methemoglobinemia at any time be other than harmful, how comes it to be associated with various pathologic conditions and in these without extraneous origin? It has been found in exudates and transudates, also in the blood following severe burns and scalds, in insolation, septic conditions, in Addison's disease, etc. The question may be answered thus: In these and probably many other morbid conditions, methemoglobinemia (always noted as only a trace and by no means of a degree that could be responsible for death of the patient) represents a conserving process of nature which we imitate by inducing therapeutically a like blood change. Nature accomplishes this by the products of metabolism. Of such products, which produce methemoglobinemia, two which may be cited are pyrocatechin and hydrochinon, and doubtless there are many others.

Viewed from the dual standpoint of oxidizer, both of reducing substances in the blood and of the tissues themselves when for some reason pulmonary respiration is inadequate to furnish sufficient oxygen, induced conservative methemoglobinemia would explain the present empiric use of substances which produce the met compound, viz., nitrite of amyl in angina pectoris, pyridin inhalations in asthmatic attacks, potassium chlorate in tonsillitis and its occasional use, long continued and with success to prevent recurrent abortions, the bromin salts in epilepsy, iron as the perchlorid in chorea minor and as insisted on by the older practitioners in sepsis, Lugols solution and the iodid of iron in scrofulous and cachectic conditions, potassium permanganate in anemia, quinic acid[12] recently recommended as specific treatment in gout, etc.

Because fumes of pyridin proved useful in asthmatic attacks, I concluded to try potassium chlorate as a constitutional in the same condition, and obtained good results, although I would not care to have a patient continue long on this drug, or at least without constant supervision, for fear of damage to the kidneys. Also, one need be clear as to one point. I do not mean to say that, because each of a number of drugs can produce a methemoglobinemia, they may be indifferently substituted in treatment, one for another. Without doubt other affinities, too, of these remedies must decide our choice. The rapid but evanescent relief from dyspnea and vasomotor spasm effected by use of amyl nitrite or pyridin fumes could not well take the place of the prolonged effect on metabolism of potassium chlorate or the latter of the bromin salts which experience has shown approaches specific effect in epilepsy. Yet substitution of met-producing drugs is, to some extent, efficient, as we have seen, and may again be noted herein that the one vegetable drug which it has been found fills a serviceable place beside the bromids in the treatment of epilepsy is *Solanum carolinense*, a plant which belongs to one of several classes that contain so-called saponin bodies, glucoside substances which produce methemoglobin.

There are many other facts pertinent to this line of thought which might be added, but enough has been said if, in response to this first paper, members of the profession, and especially such observers as are able concurrently to utilize clinic and laboratory, will find the subject of sufficient interest to test the principle here advanced, full confirmation of which would materially extend the province of rational therapeutics.

I take pleasure in expressing my obligation to Prof. W. E. Engle of the University of Denver for the privilege of working in his laboratory and for his assistance in examination of blood with the spectroscope.

Since writing the above article J. von Mehring's[13] frequently quoted thesis on potassium chlorate has come into my hands. One important conclusion of von Mehring was "that with an accumulation of CO_2 in the blood (blood from carotid artery in dyspnea) and in an amount not resulting in death, the deleterious effects of $KClO_3$ are increased in great degree" (i. e., absorption bands of methemoglobin were noted after a much shorter space of time than with normal blood from the carotid). The same result was observed after addition of small amounts of acid sodium phosphate to blood.

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[11] In reference to this, the fact already pointed out, that methemoglobinization of the red cell is equivalent to a superoxidation, is again of interest here, in that it suggests the possibility that the O atoms when freed act as nascent O. According to Engler's views, the first step in systemic oxidation is the decomposition of peroxids by that class of ferments, known as peroxydases, while, according to Landois and Sterling, it is the active or nascent O that acts as so powerful an oxidizing agent that it converts water into hydric peroxid, N of the air into nitrous and nitric acid and CO into CO_2, which ozone does not.

[12] Dry distillation of quinic acid yields pyrocatechin and hydrochinon (U. S. Dispensatory 17 Ed., page 1432) both of which transform O_2Hb to MetHb.

[13] Mehring, J. von: Das Chlorsaure Kali, 1885.

My own conclusions are just contrary to the above where slight, therapeutic methemoglobinemia is concerned, and which may, therefore, be stated thus—in dyspneic conditions, the greater the rapidity of an induced methemoglobinemia proportionate to the needed oxidation of increased amounts of reducing substances in the blood, the greater and more rapid the benefit to the patient. This is also in accord with personal clinical experience as regards relief of dyspnea by administration of certain methemoglobin-producing drugs in small amounts. I have not tested the effect of this same class of drugs in phosphorus poisoning, but I find in von Mehring's thesis the following reference: "Tessliers[14] observed at the clinic of du Moulin in Ghent a case of phosphorus poisoning, wherein the patient, owing to great repugnance to turpentine, was given potassium chlorate, with apparent beneficial results." It is significant that turpentine shares with potassium chlorate methemoglobin producing properties.[15]

SYMPTOMS, DIAGNOSIS AND PROGNOSIS OF UNCOMPLICATED INTESTINAL AMEBIASIS IN THE TROPICS.

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SYMPTOMATOLOGY.

The symptomatology of amebiasis varies more than is generally taught and it seems desirable that this more comprehensive clinical picture be taken up more in detail, calling particular attention to the early diagnosis of the disease and to some of the peculiarities of the milder forms.

In discussing this question, writers have generally divided the cases into groups according to the clinical manifestation which, as clinical conveniences, answer the purpose and are fairly uniform. Osler considers it under the headings acute and chronic. Harris divided the disease into very mild forms, moderately severe cases and very severe ones. Lafleur and Futcher divide them into grave and gangrenous forms; those of moderate intensity and chronic ones.

I shall discuss the subject under the following convenient clinical divisions:

1. Latent and masked infections.
2. Mild and moderately severe ones.
3. Severe cases, including gangrenous and diphtheritic ones.
4. Infection in children and in the aged.

These clinical forms often change from one to the other and may do so several times during the course of the disease in the same patient. The amebic process in all is essentially chronic, but acute symptoms from concurrent or secondary infection by other agents are frequently seen.

Latent Infections.—By this term are designated those cases in which there is a true pathologic process, containing amebas without diarrhea or other symptoms which would ordinarily indicate the presence of such an infection.[1]

It might be objected that this latency is really a period of incubation. In a sense, this may be true, but as many of the cases, even fatal ones, always remain in this class, and as there are nearly always certain manifestations in addition to the positive one of the presence of amebas, it seems better to give latency a separate place in the clinical classification; and, furthermore, the most useful results will be secured by making such divisions rather sharp and by confining the incubation period in all classes of the disease to the unknown time between the infection and the appearance of amebas in the stools.

Under these circumstances it is readily seen how difficult latency may be to differentiate from what properly may be termed incubation. This becomes all the more difficult when we remember that amebas may possibly be found transiently in the normal intestine and that there are at present no practical means of differentiating between species of amebas. It is clear, therefore, that by basing treatment on the method of diagnosis recommended, unnecessary therapeutics may occasionally be instituted.

Cases of this latent class are not infrequent in Manila and are becoming more and more recognized, as we learn more of the character of the infection, and I do not believe that giving them a place in a purely clinical classification can be criticized by those who have had experience with the disease in the tropics. They are certainly of very great importance and deserve the most careful consideration, for the life of the patient often depends as much on the diagnosis and treatment here as it does in some of those clinically more active infections. Some of these patients, as has been noted, never show clinical manifestations during life, and in some others, when such symptoms do develop, the time for successful therapeutics may have passed.

The course and outcome, as in some other types, varies greatly. Usually, after a period ranging from a few weeks to many months, more active symptoms develop and in general the patient assumes the clinical type of a more or less severe dysentery. This change may occur gradually or very suddenly, and in the latter instance, unless the patient has been under very close observation, we may be misled into believing it to be one of primary acute amebic dysentery. On the other hand, some of these cases go on to recovery or death, without ever showing active diarrhea.

The symptoms during latency may be entirely absent subjectively and objectively for considerable periods of time; but usually conditions develop, which, by the aid of postmortem findings, we have come to recognize as indicating the nature of the process. As has been stated in previous publications, these cases are essentially those in which the lesions are in the cecum and upper colon. Careful stool examinations, obtained after a hydrogogue cathartic, often show mucus mixed with old discolored blood and other tissue elements, indicating both the location, and with their associated amebas, the nature of the infection. Rather indefinite, dull, aching abdominal pains are frequent and are often attributed by the patient to "taking cold," because they are first noticed during the night or early in the morning, and afterward are usually most active at these times. There may also be some "indigestion," lassitude, headache, a coated tongue, foul breath, etc. Loss of appetite may be present, and the patient often notices slight loss of weight, and, if a woman, usually complains of loss of color and a yellow skin. Physical examinations will usually secure additional data. Deep palpation discloses tenderness along the colon, most often over the cecum, and if the duration is great and the patient not too fat, a thickened intestine may be made out.

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[14] Annal de la Soc. de med. de Gand, 1882.

[15] Other authorities which may be referred to are: Beilstein, F., Organische Chemie, Dritte Auflage. DaCosta, John C., Jr., Clinical Hematology, 1901. Ewing, James: Clinical Pathology of the Blood, 1903. Grawitz, Ernst: Klinische Pathologie des Blutes, 1896. Kobert, Rudolf: Lehrbuch der Intoxicationen, 2 vol., 1902-1904; U. S. Dispensatory, 17th edition, Article on Ptomaines, 1898. Wood, H. C., Therapeutics, Principles and Practice, 10th edition, 1897.

* Read in the Section on Practice of Medicine of the American Medical Association, at the Fifty-sixth Annual Session, July, 1905.

NOTE.—The other papers in this symposium will appear in a later issue of THE JOURNAL.

[1] Dock, in 1891, reported extensive amebic ulceration in the cecum of a man who had not had dysentery and who had passed only normal stools. Councilman and Lafleur, in 1892, and Lafleur, in 1897, called attention to the fact that an amebic process may be latent, the stools being well formed and no amebas being found in the small adherent flakes of mucus, and that in these cases the true nature of the disease is often not suspected until abscess of the liver calls attention to it. These observations have been confirmed by Osler, Rogers and many other writers.

Examples of this class of cases, as stated above, have been reported by several writers, and I have called particular attention to them in previous publications. Two additional examples from many that might be given are briefly as follows:

CASE 1.—A young married woman, previously in good health, came to the Philippines in 1903. About three months later she consulted me, complaining of general lassitude, dull pains in the back of the head and neck, coated tongue and bad breath.

Treatment.—She was given calomel and soda in broken doses, followed by a Seidlitz power the following morning, when examination of the stool showed amebas fairly numerous and of good size. She was placed on a bitter tonic of iron, quinin and strychnin. For the next three months there was little change in the general health and the bowels continued regular. Amebas were again demonstrated in the stools and this time were mixed with mucus, showing streaks of old discolored blood.

Course of Disease.—During the next month she complained of dull abdominal soreness, which on pressure was more marked in the region of the cecum. "Indigestion" was complained of, anemia was noticeable, and she had lost five pounds in weight; but the bowels were still regular and apparently normal. At this time she consented to take enemas, but after about a week's time she became dissatisfied and passed to the care of another physician, on whose recommendation she spent three months in Japan. While in that country her symptoms of indigestion were less noticeable and headaches were absent, and she returned feeling in better health and spirits. Shortly after her return to Manila, however, there was a recurrence of the symptoms before complained of, and in a more pronounced form; in addition flatulence became annoying: but there was still no diarrhea. Stool examinations after a hydragogue cathartic showed numerous amebas, and considerable mucus with some blood. Her symptoms, as usual, were relieved temporarily by the cathartic. About this time she had had a moderate diarrhea, which lasted for a few days and was followed by constipation, with severe pains in the right iliac region. Another attack of diarrhea came within a week and dysenteric feces began to be voided. Typical acute dysentery developed, and death occurred within ten days after the acute onset and nearly one year from the time when amebas were first found in her stools.

Autopsy.—At necropsy an old advanced amebic infection of the cecum and upper colon, with most extensive ulceration and chronic fibrinous adhesions were found. More recent amebic lesions were scattered throughout the rest of the colon, and an exquisite acute diphtheritic dysentery was engrafted on the older process.

CASE 2.—A Filipino prisoner in Bilibid prison showed amebas in his stools on repeated examinations for more than four months. Sometimes after administration of salts blood cells were present, and the mucus was sometimes stained with dark, partly decomposed blood. He was apparently a perfectly healthy man, and had no diarrhea or dysentery.

Autopsy.—At necropsy, following death from intercurrent lobar pneumonia, the cecum, and ascending and transverse colon showed amebic ulceration, which was quite advanced about the hepatic flexure.

In addition to latency, the symptoms of this infection may be completely masked, and mistakes in diagnosis are, no doubt, frequent when the disease is endemic.

The clinical manifestations of several diseases may mask those of a latent or mild amebic infection. The scope of this paper will not allow a full discussion of these, and the subject will be treated more thoroughly in a paper soon to appear on the complications and sequelæ of amebic infections. Perhaps the most frequent of these conditions, and those which are also likely to lead to mistakes, are chronic constipation and gastritis or appendicitis. The latter of these has already been discussed.[2] Gastric symptoms of more or less severity are particularly prevalent in the tropics, both with and without amebic infections of the colon; and for this reason, particularly when severe, often completely obscure the less active disease when present.[3]

Numerous examples might be cited, showing the variety and prevalence of such conditions; but my object here is to call particular attention to it, without leaving the impression that every case of stomach trouble in the tropics masks an amebic infection of the colon.

Constipation is a very prevalent condition in the tropics, as it is in the United States, particularly among women; and, as might be inferred, may frequently mask amebic infection in the early stages, and in the latent and less active forms until irreparable damage may have been done to the colon.

I have under my care now a woman who has for years been a chronic sufferer from constipation. About five months ago she began to lose weight and other symptoms developed, suggesting probable amebiasis, which was confirmed by microscopic examination of the feces. During this time, the constipation had persisted, notwithstanding that blood and mucus were obtained with every specimen secured by salts, and diarrhea did not develop until about two weeks ago. Dysenteric stools quickly followed, and treatment, which is still being given, was instituted.

Such cases as this and th[illegible]cribed are of frequent occurrence in [illegible] and support the conclusion which I have already expressed, namely, that the presence of amebas in the stools should always be considered diagnostic, at least in so far as treatment is concerned. The fact that one occasionally sees a case similar to those mentioned above, in which clinical dysentery never appears, the patient never feels ill, and amebas eventually permanently disappear from the stools, is not a sufficiently strong argument against the conclusion given, until such time as definite data indicating the final outcome are available early in the infection.

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[2] Bull. 18, Bureau of Governnment Laboratories. THE JOURNAL A. M. A., April 8, 1905, p. 1098.

[3] I now have in mind such a case in a very prominent man in Manila. He had for years been a sufferer from chronic gastritis, and after a few months' residence in the Philippine Islands the symptoms became more aggravated, and just as previously, he had periodic outbreaks of diarrhea, only that with the increase in the stomach symptoms, the diarrhea became much worse. At the end of six months he was confined to his bed, unable to retain food, and reduced almost to a skeleton, and the bowel evacuations had become dysenteric. An examination of the feces showed numerous amebas with blood and mucus. Under careful treatment, directed particularly to the amebic infection, he slowly improved and was eventually restored to his usual health.

Mild and Moderately Severe Cases.—These form by far the great majority of those seen in Manila at the present time. Formerly they occupied about the same place as that occupied now by latent ones, i. e., they were treated as simple diarrheas from other causes, and often the true nature of the infection was not recognized until the development of bloody mucus discharges, or more often the pathologic report called attention to it.

The symptomatology of this class of cases, as well as that of the more severe cases, is so well understood and has been so often described that I will condense that part of the paper into calling particular attention to the conclusion which we have come to in our work in Manila, that diphtheritis and other acute pathologic processes seen at postmortem in this disease are the result of other etiologic agents and are not a part of the true amebic infection.

The larger number of these cases develop from the latent ones already described, just as the majority of the more severe ones usually arise from this type. It is impossible to say just what proportion of them develop as such primarily or follow a more or less definite latent period; clinically, the time of onset is usually dated from the appearance of diarrhea. There may be prodromal manifestations before the onset of diarrhea or dysentery in cases in which amebas may not be found at the time, but here the prodromes are very like the manifestations of the latent type, viz., indefinite abdominal pain, generally attributed by the patient to "taking cold" and explained by not a few as being caused by sleeping without an abdominal band on certain cool nights; tenderness on palpation along a part or all of the colon, "indigestion," headaches, usually of a dull cerebral type, a general feeling of depression, ill health and irritability of temper, and sometimes melancholic tendencies, with anemia and loss of weight.

In the majority of properly treated patients the disease clinically rarely passes from diarrhea, but sometimes here as well as in the larger number of untreated ones diarrhea is only preliminary to a more violent clinical picture. Many cases, however, even without treatment never become dysenteric in the general acceptation of the term.

The course in uncomplicated cases is extremely chronic and the outcome rarely recovery, being most commonly the development of "sprue" or chronic gastroenteritis giving other clinical pictures; and the most frequent termination is death from intercurrent disease or complications. I am still in correspondence with a number of old Manila patients, now in the United States, in which the cases are of from four to six or more years' duration, and in which symptoms are still very much the same as when the patients left Manila.

Following a gradual onset from a period of known latency, the diarrhea is usually intermittent and more marked in the mornings, consisting of two, three or four soft, semi-fluid stools, without mucus or blood and passed without pain. This condition may last from one to several days, and is usually followed by a tendency to constipation. Succeeding outbreaks usually become more severe and may last for days, weeks or months, until the appearance of blood or mucus causes the patient to realize that he has dysentery, and it is at this stage that he most often appears for treatment. When the onset is more sudden, some blood and mucus are frequently noticed in the stools from the first; there may be some tenesmus and symptoms may continue for a few days, to be followed, as in the first case, by a period of constipation. The subsequent course of the disease in the two cases may not be different, but usually the more acute the onset the more rapid development of more severe symptoms. It is certain that in not a few of these the sudden outbreak is not due to amebas, but to other causes. There are frequently the same extrinsic causes for these outbreaks as when they occur in subjects free from amebas, which is, of course, of frequent occurrence in the tropics, and, in addition to this, careful inquiry will often reveal that there were significant manifestations before the onset in the amebic cases, and it may even be observed when amebas were known to be present for some time prior to the outbreak.

Severe Cases.—The clinical aspects of this type of the disease are the best understood and carefully described. and need but a brief summary here. As is true of the class of cases just discussed, in by far the greater number of cases it develops from a previously existing latent or milder type.

To this class belong also the diphtheritic and gangrenous cases, which are always severe and are undoubtedly due to a concomitant or secondary infection with some other agent, which is also the cause of severe forms of other types.

The onset here, whether occurring in an apparently healthy subject or following an existing milder type, is usually quite sudden and is characterized by the phenomenon of an acute dysentery from other causes. There are frequent mucus bloody passages, with tenesmus, colic, thirst and perhaps some fever.

In this severe form, whether apparently primary or secondary to one of the milder types, the course is usually much shorter and death is frequent from toxemia, perforation of an ulcer or from exhaustion of the patient. There are cases in which postmortem examination may show excellent nutrition and a rotten intestine, with either extensive gangrene or diphtheritis. Even in these, however, not infrequently the severe symptoms subside under treatment, and the case may continue as a more moderate one, or may be even mild in its symptoms, thus exemplifying the previous statement that the clinical types designated may frequently change from one to another even in the same patient.

Infection in Children.—Particular attention has been called to the disease in children by several writers.[4]

I have had twenty-one cases in children between the ages of 6 months and 10 years in private practice in the Philippine Islands, and one necropsy in a girl 3½ years old. When we consider the increased danger of infection which is present for children in the tropics, we must conclude that they present an increased natural immunity, a fact which is still further borne out by a study of cases in which infection does occur, for the disease is usually of a very mild type and is very amenable to treatment. In only two of my cases (in addition to one death) was the disease what could be called moderately severe from its clinical manifestations. The symptoms, in general, conform to the milder types in adults, and recovery is almost certain under proper treatment. I have seen children in whom there was undoubted active infection recover without treatment.

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[4] Amberg, in 1901, carefully reported five cases from the Johns Hopkins Hospital, and reviewed the literature on the subject. *Harris reported* thirty-five cases, four of them in children under 10 years of age. Strong found amebas in the tuberculous ulcers of a 3-year-old child; Slaughter in liver abscesses of a 17-year-old boy; Kartulis in children of all ages except infancy; *Pfeiffer* in the stools of several children; Lamb in a 2-year-old child; Lutz in the stools of a little girl; Sonsino in the intestinal mucus of a child; Cahen in a girl 4 years old; Gneftos in the liver abscess of a 6-year-old girl. Oddo (1897) reported twelve cases of liver abscess following dysentery in children between the ages of 2 and 13.

The aged, as in the case of children, seem to manifest a decided natural immunity; but, when once established, the disease in them is usually of more serious import than even in young adults. The symptoms are commonly of a severer nature, the course is more rapid, and the mortality higher, generally, as in other patients, due to complications or to intercurrent disease.

One thing particularly noticeable both in children and in the aged, as well as in natives of the Philippine Islands, is the great relative infrequency of liver abscess. I have not seen a case of liver abscess in more than one thousand clinical cases and one hundred autopsies of natives of the Philippine Islands.

Analysis of Symptoms.—All varieties of facial aspect are seen, from a healthy one in some of the rapidly fatal cases to the more emaciated, anemic, yellow and even cachectic of some in the old long-standing ones. Usually for a long time the patient does not appear to be ill, and I have seen patients with the disease of more than two years' duration who had lost no time from the daily occupation.

In the early part of the disease the skin rarely shows any noticeable change, but in the old emaciated cases there is a general waste and a scrawny, dull, goose-flesh skin, often of a muddy color or even jaundiced. In this class of cases there is frequently an odor which is quite disagreeable and which is as characteristic as for any of the diseases in which its diagnostic value is emphasized. Perspiration is usually not very active, but cases are occasionally seen in which the night sweats equal those of tuberculosis. Edema, particularly of the feet, ankles and less frequently at the hands, and the face about the eyes, is often present, but is not necessarily an indication of Bright's disease. Albuminuria and casts may be present at times when these edemas are noticed; and involvement of the kidneys is frequently observed postmortem, though in the majority of the cases terminating in recovery the proper functioning of the kidneys is restored, and there is no further trouble from this source. Bed sores are rarely seen, except in the most chronic types of old emaciated, anemic patients, shortly before death. Boils are frequent in the tropics during convalescence from any wasting disease, and in amebiasis they are not exceptional. Of rashes, urticaria is of quite frequent occurrence and often annoying in its persistence. Quinin rashes, from absorption of this drug, are the most frequent and troublesome, often requiring a suspension or change of treatment. Enlargement of the superficial lymphatics without pain is common, particularly among natives; but this is so frequent an occurrence in health and other diseases that diagnostic importance can not be attached to it.

Digestive System: The organs of digestion bear the brunt of this disease, and it is here that diagnostic symptoms are most frequently observed. The appetite is most generally good, particularly so in the latent and mild cases during the early part of the disease. Later catarrhal conditions of the upper intestine, stomach and even esophagus are followed by variations in the appetite, due to such alterations. In the early disease, likewise, but little or no discomfort is felt from satisfying a normal desire for food, but later such action is often followed by an increased diarrhea and by a further disturbance of the already disordered upper digestive tract.

The tongue is in no sense a valuable interpreter of the conditions at the seat of the amebic lesions. It may be clean or coated with furs of various colors and types. It may be large or swollen, showing the marks of the teeth along its edges, or it may be red and pointed. In very old chronic cases, in which the clinical picture is that of sprue, the tongue is one of the valuable indicators and here often shows small ulcers along its sides and under the tip. Glossitis, with superficial ulcers and hyperemia of the mucous membranes (sprue), is not uncommon, and when present causes a dryness and burning sensation, which is very annoying. In the same class of cases, too, the frequent lesions of the esophagus cause a burning pain along this viscus, which is aggravated by acids or solid food. Thirst is usually increased and often markedly so when the clinical symptoms are quite active, due, no doubt, to the loss of body fluids through the ulcerated bowel.

Symptoms referable to the stomach depend, for the most part, on various stages of catarrh of this organ and do not differ from symptoms of similar conditions due to other causes. In the early part of the disease, the stomach most frequently remains in good condition, but in the later stages, and sometimes quite early, its symptoms may be very annoying. Nausea is frequent, but vomiting rare at any stage. Both these conditions are aggravated and frequently are direct sequences to treatment by enemas. Symptoms of hyperacidity, with beefy-red tongue and epigastric pain, (heart-burn), are encountered from time to time in all classes of cases; but a fermentative condition, with gas, a large, coated, flabby tongue, nausea and loss of appetite, are more common conditions.

The small intestine may be normal, but sometimes in the more chronic cases it shows a general catarrhal condition, which manifests itself by the usual symptoms of enteritis of other etiology. True amebic ulceration occasionally extends for from 2 to 10 cm. into the ileum, and in one case a perforation of an ulcer above the valve occurred, and the symptoms brought about by it closely resembled those seen in severe infection of the cecum.

The Large Intestine and Feces: The bloody-flux interpretation of the word dysentery must be abandoned in this disease, or, perhaps, a better solution would be to change our nomenclature so as to avoid calling it dysentery at all. It is true that diarrheic, or even dysenteric, stools are present at some time during the course of the disease in the *majority* of cases which proceed to a fatal termination; but even here this is not always so, and true dysenteric stools are not the rule in patients in whom treatment has been instituted early and properly administered.

There are numerous examples in literature of patients who have died of the disease in whom during life there was slight or no clinical dysentery. Such cases have been reported by Councilman and Lafleur, Osler, Dock, Strong and Musgrave and many others; and we (Mr. Clegg) have emphasized it in a recent paper.

In this paper I have already cited cases, and to them could be added at the present time a considerable number in which there was no diarrhea or dysentery at any period during the course of the disease, and yet death occurred from perforation of an ulcer or from intercurrent disease. Further, within the past year, in addition to a case already mentioned, I have performed the necropsy on the body of a patient who had been treated for more than six months for constipation, in whom advanced amebic ulceration of the cecum and ascending colon was found after death, resulting from perforation of a liver abscess. Such cases, of course, are not the rule, but they are sufficiently numerous to be of importance and are emphasized particularly for the purpose of demonstrating that, as in the case of many other infections, experience broadens our conception of the clinical picture.

With this data, I am prepared to state that in this disease there may be any stage between constipation and severe clinical dysentery, or alternations between these two conditions may be present throughout the course of the disease; and it is in this variation that we secure data for the arbitrary clinical division of the cases.

From what has been said it is seen that this clinical division is not necessarily borne out by the pathologic picture, and, therefore, it must not be inferred that the disease is of necessity mild because of the absence of a severe diarrhea.

In the great majority of cases, after a more or less prolonged incubation or period of latency, alternating periods of diarrhea and constipation develop, and usually the diarrhea becomes more severe with each return and persists longer, the constipation becoming less marked until finally formed feces are no longer passed. The diarrhea is usually more pronounced in the morning and after meals. In long-standing cases, the patient *complains that the food passes through unchanged as* soon as eaten.

There is nothing characteristic in the macroscopic appearance of the feces. Their consistency, amount, color, etc., may vary between the widest limits. In the early stage of the disease they are frequently formed and otherwise normal, and the surface may or may not show coatings of mucus sometimes streaked with blood. The morning specimens are usually the first to have a diarrheic appearance and are often copious and fermenting. When the infection is more advanced, the feces may take on the appearance of those due to chronic catarrh—fluid, with mucus and particles of undigested food. On the other hand, frequent large, light gray fluid or granular, foul-smelling evacuations, with mucus, and with or without fresh or old blood, and sometimes masses of tissue and occasionally casts of the mucosa, may persist for weeks or months. Again, particularly when the infection is low in the colon and rectum and there is some severe secondary infection, the stools may resemble those of acute dysentery in character and symptoms produced. The odor of the feces in many cases is particularly offensive and all but characteristic, so much so that diagnostic importance may be attached to it. The next most important point of diagnostic value obtained from a macroscopic examination is the indication of the location of the infection by the character of the blood, when such is present.

Amebic infections can be diagnosed with certainty only by microscopic examination of the feces or other material, and by this method also other valuable data may be obtained.

The best method of securing a specimen and the manner of procedure for microscopic examination have been described in *Bulletin* No. 18, Bureau of Government Laboratories, and some additional points are mentioned under the heading of diagnosis in this paper.

The presence of motile amebas should be considered diagnostic, at least in the tropics. The difference in size and numbers, the presence or absence of enclosed blood cells, and other described points of differentiation, I believe to be fallacious, as pointed out in a previous publication.

Many other parasites and substances of more or less importance are often found associated with amebas. Among animal parasites are the *Trichomonidæ, Cercomonidæ, Megastoma entericum, Embryo strongyloides,* ova of uncinaria, *Trichuris, Tænia, Oxyuris,* and others, either singly or in various combinations. At least some of these have a part in the production of the symptoms and must be reckoned with in treatment. Of other substances present may be mentioned leucocytes, red blood cells, pus, epithelial and other cellular elements. Various crystals are often present, but with one or two exceptions are of no diagnostic importance. Many other substances may be found, but as they have been so repeatedly discussed by others and are of such slight importance to the subject in hand they will be omitted.

Circulatory System: The circulatory system in this disease shows essentially the changes of secondary anemia. The pulse is usually of good quality, except in the later stages or in the presence of complications, when it takes on a type due to such involvements. Early in this disease the blood shows little or no change, the red cells being normal in numbers and free from abnormal elements, the leucocyte count is normal, the relative proportion of the cells is not disturbed, and the hemoglobin estimate is also normal. As an uncomplicated case progresses, the red cells begin to show changes due to anemia, and in the later stages the irregularity in their size and shape may be quite marked, and the count may show great reduction, notwithstanding the loss of fluid from diarrhea. The leucocytes under like conditions show some disturbances in relation of varieties, usually an increase in polynuclears and eosinophiles, but these changes are never such as to be of diagnostic value. Hemoglobin decreases with a reduction in the number of red blood cells. The spleen is not enlarged, except in some severe cases complicated by or associated with other infections.

Temperature: Fever is most often absent throughout the course of the uncomplicated disease. It may be present in a moderate degree, when it is usually of an intermittent type, highest in the afternoons. In acute exacerbations from any cause, and when there is an intense secondary involvement, particularly diphtheritis, it may be an important factor. Only recently I was for some weeks very much puzzled by an intermittent temperature, reaching its maximum of from 38 to 39° C. about 10 o'clock a. m. daily, in an amebic patient, until other symptoms proved the presence of an intercurrent syphilis. It is frequently found, but by no means constantly so, in liver abscesses. Here, if the abscess is also the seat of bacteria in considerable numbers, the septic temperature may closely resemble that of a malarial infection, endocarditis or almost anything else, of either the intermittent or the remittent type. On the other hand, one occasionally finds a large liver abscess without fever at any time. As the disease becomes more advanced, it is quite common for patients to exhibit subnormal temperatures, particularly during the forenoons, for days, weeks or months in succession.

Nervous System: This probably does not suffer much as a direct consequence of amebic infections, but of this I am not at all sure. There are many cases of neuritis, neuralgia, etc., which are so closely connected with the disease that until we are more fully acquainted with the exact method of the action of amebas in other parts of the body, our opinion can only be based on supposition.

Pain: The subject of pain in general, however, may be conveniently discussed here. Its variety and intensity in this affection is very great. It is partly a direct consequence of lesions and partly the result of more remote and sometimes unexplainable causes.

Tenesmus is more often an indication of complications or severe secondary involvement than of amebic infection. It is never present in the latent forms and is usually absent or very slight in those of moderate severity; but during acute exacerbations of either of these, and particularly when diphtheritis or other secondary infection, including that of *B. dysenteriæ Shiga,* is present, it may be very severe. It is much less severe or more likely absent when the lesions of whatever type are in the cecum or upper part of the colon.

Colicky pains are not infrequently seen, and even severe acute intestinal colic sometimes supervenes, especially when there is marked catarrh of the small intestine.

Dull, aching, somewhat indefinite abdominal pain is one of the most frequent prodromal symptoms, and quite frequently it is persistent during the disease. Sometimes it is so severe and constant that rest is impossible for days or weeks at a time. Though most usually complained of as being of maximum intensity along the course of the colon, as general careful palpation will show, not unusually it is found only in the region of the cecum and is sometimes complained of in the muscles of the back. Such pain may be due to the processes going on in the bowel, and, again, as demonstrated by postmortem examination, it may be the only indication during life of the most extensive serous inflammations and adhesions. These pains are often most active in the night, even in the mildest cases of infection, and may interfere seriously with the patient's rest.

Pains described by patients as "heart burn in the abdomen" may be general or more frequently local. When active lesions are low in the sigmoid and rectum, these and what are described as burning pains are frequent. The latter may be intense about the rectum, and may sometimes extend down the backs of the thighs and even to the calves of the legs. Old sciaticas are often "fired up" under these circumstances, and the beginning of sciatica is associated with such cases often enough to be suggestive.

Pains simulating those in appendicitis have been more fully discussed in Part 2 of *Bulletin* No. 18, Bureau of Government Laboratories, and in the Journal A. M. A., April 8, 1904. They are probably the most important with which we have to deal, because their true interpretation is so vital to the patient and because they are of such general occurrence in all varieties of amebic infection, from the latent to the gangrenous, with or without the presence of amebic or other forms of appendicitis.

Neuralgias, myalgias and arthralgias are met with too frequently to allow them always to be considered accidental associations. Persistent, dull headaches, particularly of the back of the head and neck, are also not uncommon. The genitourinary and respiratory systems and the organs of special sense rarely contain lesions which produce symptoms of any importance in the uncomplicated disease. The same is true of the joints and the osseous system, though complications may involve any of these structures.

DIAGNOSIS.

There are no classical symptoms in the disease, and hence an absolute diagnosis can be made only by microscopic examination of the feces.

In remote areas where the infection is endemic and where microscopic facilities are not available, one would be justified in making a diagnosis for purposes of treatment from clinical manifestations alone, but where laboratories are accessible this should never be done.

If one remembers the multiform clinical pictures which have already been discussed and watches the case for some time, a diagnosis of amebic infection may reasonably be inferred, but it must be borne in mind that the clinical picture does not in general differ materially from that often seen in diseases with an entirely different etiology, and, further, that there is not a single symptom or group of symptoms which is confined to this disease alone.

The following are the most important clinical manifestations in a question of diagnosis:

1. The bowel evacuations, particularly their odor, and the presence or absence of blood. Their consistency, quantity, frequency and the presence or absence of mucus, are much less important.

2. Abdominal soreness, which is increased on pressure and extends particularly along the colon, is most common and, taken singly, is one of the most valuable symptoms. Its diagnostic importance is greatest when of maximum intensity over the cecum and ascending colon.

3. So-called "indigestion" headache, general lassitude, with nausea or pain below the stomach after eating, etc., is quite common, but is also prevalent at other times, so that but little importance must be attached to it alone.

4. Loss of weight, especially in the presence of a good appetite, is quite important and is the best guide to the progress being made by the infection.

As already stated, neither one nor all of these symptoms taken together are sufficient for an absolute diagnosis; but when taken together in cases where careful palpation reveals a thickened, tender colon in places where it may be felt, they make the nearest approach to a sure diagnosis possible without microscopic examination of the feces.

The question as to whether the presence of amebas in the feces is always absolutely diagnostic of an infection of the colon has already been discussed. It may be that such is not always the case, but I believe that it is so nearly so that such an occurrence, at least in the tropics, should be considered diagnostic, at any rate for purposes of treatment. Such a conclusion is all the more justifiable when we consider the great certainty of good results in treatment instituted early, the long incubation period or latency which severe cases may show, the inability ever to establish a more certain diagnosis in those cases of light infection which terminate in recovery and, finally, above all, *the great reduction of the danger of liver abscesses by instituting early treatment.* It will be remembered that, according to statistics from many places, including Manila, over 20 per cent. of untreated patients or those not treated by enemas have developed liver abscesses, and that in a very large number of patients treated by my colleague and myself in private practice during the last few years, along lines laid down in *Bulletin* No. 18, there have not been more than two cases of liver abscess which developed after treatment was instituted. Inasmuch, then, as a correct diagnosis can be made only by finding amebas in the intestinal contents, and as their presence here, at least for purposes of treatment, are to be considered diagnostic of infection, regardless of clinical symptoms, the best method of determining their presence or absence should be part of our subject.

This is not always an easy matter. When there is active clinical dysentery, a microscopic examination of one of the passages will usually reveal amebas, but even here single or even several examinations will often yield negative results. The specimen for examination should, when practicable, be one obtained by some hydragogue cathartic, because the infected area frequently includes only a portion of the colon, and by this means the specimen is more certain to contain feces from the entire track.

For the same reasons, the method of extracting a specimen through a speculum can be of maximum value only where the lesions are in the lower bowel. For obvious reasons castor oil is not a satisfactory cathartic for this purpose, and specimens obtained by enemas are likewise unsatisfactory.

The specimen should be as fresh as possible when examined, for, while amebas will usually remain motile for several hours and sometimes for days, in many instances they lose their motility in a very short time. In Manila, a warm stage will never be found necessary, and a diagnosis had best not be made from any but motile organisms.

Usually no difficulty will be experienced in differentiating amebiasis from other diseases, but when other troubles exist as complications or associated diseases, which is of very frequent occurrence, the solution is often not so simple. Suffice it to say here that in practically every instance in which such complications or associations do exist they are rarely of a nature which offers contraindication to the institution of the usual treatment of amebiasis, and, therefore, whether or not the nature of the complicating trouble is determined, treatment of the amebic infection should be prosecuted.

PROGNOSIS.

The prognosis in this infection should take several points into consideration, and the evidence in each individual case should be carefully weighed before an expression of opinion is justifiable.

Fortunately, in Manila, owing to the good results of treatment, the physician is rarely called on to say very much; but in the more prolonged and persistent cases prognosis is eagerly sought by the patient and his friends. In general, under proper treatment recovery is the rule in young, well-nourished adults, in whom the disease is not of too long duration.

The principal determining factors in giving such prognosis are the manner of treatment, age, nationality, general condition of the patient and duration of the disease at the time treatment is instituted, reaction to treatment, the presence of complications and associated diseases, and, finally, the location of the amebic lesions.[5]

It must be remembered that in a certain percentage of cases, particularly in children and natives, the patients recover from the disease without any treatment whatever. On the other hand, one occasionally sees a patient in whom the disease is progressive from the first, and death is not apparently delayed by any form of treatment.

The disease is generally milder in children and in natives of the tropics, and its course is more often shorter and its mortality higher among the aged. Alcoholics apparently are less frequently infected, but when once the disease is established the gravity of the prognosis is increased. Previous good health and good general physical condition are favorable factors. The shorter the duration of the disease at the time treatment is instituted and the greater the tolerance for enemas the more favorable the prognosis.

The presence of complications or associated troubles, such as liver abscess, severe hemorrhoids, fistula or fissure in ano, and many others less frequent, materially decrease the chances of ultimate recovery. Probably most important of all, however, is the location of the lesions. As a rule the higher up the lesions, the greater the mortality and the less active the clinical dysentery. Severe infections of the cecum, unless treated early and carefully, are always serious.

CONCLUSION.

In conclusion, I wish to emphasize the fact that intestinal amebiasis (amebic dysentery) manifests itself in a much broader and more comprehensive clinical picture than is generally allotted to it.

Waiting for bloody mucus stools to appear before making a diagnosis and instituting treatment is responsible for a large percentage of the present mortality from the disease in Manila. Such stools sometimes appear early in the disease, more usually after considerable damage has been done, and occasionally are never seen before a fatal termination or recovery.

Suppose, for example, that by treating every patient in whom motile amebas are found, as recommended in this paper, we do occasionally treat a person who would have recovered without treatment, or possibly would never have had an active lesion, are we not justified, when we consider that by such procedure established early, without waiting for clinical dysentery, we increase many fold the chances of recovery of all patients?

DISCUSSION.

Dr. George Dock, Ann Arbor, Mich., said in regard to the importance of distinguishing the latent, that he was fortunate enough to see a latent, mild or variable case very long ago, and he has already called attention to it. Briefly, the history of the case is as follows: The patient was a man who, for several months, had no loose stools at all and no diarrhea, and was absolutely free from any symptoms ordinarily referred to as dysenteric, yet he developed a liver abscess which was operated on and proved to be amebic. The patient died a few days later, and it was shown that not only were there lesions in the cecum, but also in the upper part of the large intestine, as well as in the liver. The stools Dr. Dock examined and found no amebas or other evidences of the disease. If the patient had been under his observation a longer time the diagnosis might have been made prior to death, especially if saline cathartics, as Carlsbad salts, had been given to facilitate the examination of the stools. In diagnosis, the most important thing is the proper examination of the stools, and this has been much neglected because it has been supposed to be so difficult. By giving Carlsbad salts, stools can be secured whenever wanted, and there is really no difficulty in finding the amebas, even in cool media or in cool rooms. As an important and practical aid in this examination of the stools, they should be examined, not in deep vessels, but in flat vessels, the broad low granite dishes answering the purpose very well. A certain amount of practice is necessary in order to be sure always that what is seen are really amebas. Dr. Dock likes the modification of Jenner's stain, which he believes to be as good as the specific stains. His experience in the South shows that it is comparatively easy to treat this disease if it is seen at the beginning. Cathartics should be vigorously given, and irrigations of any kind are useful, his preference being for strong saline solutions. In the chronic cases the treatment is more difficult. These latent cases are the ones which are likely to be seen in this country. At the Saratoga session, Dr. Dock was able to report such a case, and within the last year he has seen another example which occurred in a man who had never been outside of the United States at all, and yet he had a severe infection with *Amœba coli.* The greatest care possible is demanded in the treatment of the patient. It is very necessary that constipation should be avoided. Instructions regarding the diet may vary greatly. He has seen beneficial effects from the use of ipecac used after the manner of Strong, covering it with salol. About one year ago he saw an interesting case of amebic infection from the Philippine Islands. The patient had amebic dysentery, as well as uncinariasis and the *Tricocephalus dispar.* He was treated for uncinariasis with thymol, and the amebic signs then disappeared as well. Although this is spoken of as a tropical disease, it may occur in other parts of the country. Though the clinical picture varies greatly, the diagnosis can be made, and the treatment is becoming more and more satisfactory.

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[5] In my last 100 completed cases treated in private practice including all types and stages of the disease, 96 patients have permanently recovered without leaving the Philippine Islands. There has been one death and three have returned to the United States.

DR. H. R. LEMEN, Alton, Ill., stated that he has had two years' experience in the Philippines, and made careful examinations of 532 males and 53 females who were taken there as prisoners without any apparent evidences of the disease whatever, and he found 91 males and 11 females with amebas. Among 50 soldiers there were found 10 cases of liver abscess.

DR. STANLEY BLACK, Los Angeles, Cal., asked Dr. Musgrave for the points in differential diagnosis between *Amœba coli* and other amebas which exist in the stools. Dr. Black has seen a number of cases in which amebas were present in the stools, but in which there were no symptoms of dysentery, such as one expects to find when the *Amœba coli* is present. He also asked if Dr. Musgrave considers the presence of red corpuscles diagnostic of the *Amœba coli* and if the pathogenicity for cats is of importance in diagnosis. In Dr. Black's opinion the material for examination can best be obtained by the introduction of a rectal tube. The mucus so obtained often contains many amebas.

DR. F. C. SHATTUCK, Boston, stated that he has seen one case of amebic dysentery in a man who had not been out of New England. This simply corroborates what has already been stated, that the disease is not necessarily one of the tropics.

DR. CLAUDE A. SMITH, Atlanta, Ga., said that physicians meet some cases of amebiasis in the South, but of course not anything like the number found in Manila. As an illustration of the fact that some patients appear to recover or even recover without treatment, Dr. Smith said that five years ago, at the request of Dr. H. F. Harris, he made a postmortem examination of a man who ten years previously presented clinical symptoms of a severe type of the disease. He removed the colon, but there was no evidence of any ulceration, nor any macroscopic signs of previous ulceration. This also showed that the symptoms of the patient are not necessarily an index of the extent of the lesions. He recalled one or two autopsies in which he found extensive ulcerations throughout the colon, and yet the clinical symptoms did not indicate anything serious. There was one case in a negro man, about 45 years of age, whose muscular development was perfect, presenting no signs of emaciation, and who was not considered to be in serious condition, and yet he died forty-eight hours after admission to the hospital. The colon's entire mucous membrane was found to be necrotic, and yet that man had been hard at work until two days before death. He asked if Dr. Musgrave has been able to trace these cases of amebiasis after apparent recovery, and if he has found many relapses.

DR. W. E. MUSGRAVE, Manila, P. I., said that all the questions and points brought out in the discussion have been carefully gone over in the present paper and in previous publications. (See THE JOURNAL A. M. A., April 8, 1905, *p.* 1098, and Bull. 18, Bureau Government Laboratories, Manila.) In conclusion he emphasized the fact that the symptoms produced by this affection are in no way proportionate to the danger done to the bowel.

AFFECTIONS OF THE THYROID IN CALIFORNIA.*

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SAN FRANCISCO.

Six years of hospital and private work in San Francisco have strengthened the conviction that affections of the thyroid, like aneurisms and early arteriosclerosis, are more common here than in many other cities of the United States. With this idea in view, letters were sent during the last months to men in each county of the state asking for information as to the occurrence of goiter, myxedema, sporadic cretinism, and exophthalmic goiter in their districts. My obligations are here expressed to many colleagues who have kindly sent reports. There seems to-day little need for review of [illegible] ophthalmic goiter with thyroid [illegible] of nervous factors can not be denied the possible influence of other internal secretions in etiology is recognized, but the gland plays a chief rôle in symptomatology (even though, as Moebius says, there may be a prethyroid stage of the disease). Despite the vast amount of work of late on the parathyroids by Gley, Edmunds, Welch, Benjamins, Jeandelizo, Moussu, Vassale and Generali, Lusena, MacCallum, Brissaud, Pineles and others, it is not yet possible to say that they color in any way the picture.

The statement of Hirsch that "our information on the endemic occurrence of goiter in North America belongs for the most part to the early years of this century and is very fragmentary" can be modified in light of articles by Richardson, by Adami on goiter in Canada, by Osler on "Sporadic Cretinism in America," by Dock on "Goiter in Michigan." *The Medical Sentinel*, February, 1904, had an editorial on goiter in the northern Pacific states, and lately Musgrave of Washington described the great frequency of the condition in the Wenatchie and Puyallup Valleys in animals as well as man. Praslow years ago reported cases of cretinism among Indians near Cape Mendicino, Humboldt County, and among the Spaniards in Southern California. Osler in his article on sporadic cretinism wrote: "Praslow's account of the occurrence of cretins in California I have not seen, but I have letters from several correspondents in that state who know nothing of its existence at present, while in the State Insane Asylum at Stockton, Dr. Hoisholt tells me there are only two cases." It is interesting to note from reports of Dr. Gross of Eureka and Dr. Delamere of Ferndale that goiter is common in Humboldt County, not far from Cape Mendicino, although accounts of only two cretins are sent from that district. I have seen two cretins among Indians near Kelseyville, Lake County. Reports from Southern California do not substantiate the account of cretinism among the Spanish settlers.

GOITER.

Data concerning goiter must of necessity be unsatisfactory, as slight or even moderate enlargements of the gland are often overlooked; and, as in all statistics, the personal equation of the reporter must be considered. A few weeks since a physician came personally to report the absence of thyroid affections in his district and presented himself a good example of myxedema. The testimony of physicians from counties about San Francisco Bay (Marin, Alameda, Santa Clara, San

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* Read in the Section on Practice of Medicine of the American Medical Association, at the Fifty-sixth Annual Session, July, 1905.

Mateo, and San Francisco), confirms the idea that moderate enlargements of the thyroid are common. Most patients are natives of California, and inheritance from parents coming from endemic goiter regions of Europe would seem to play little part. Dr. Eleanor Bancroft, Berkeley, writes me that 5 per cent. of the young women entering the University of California in 1904 had enlarged thyroids. Since January 1, 1905, I have noted moderate enlargement in 75, large goiters in 8 patients out of 546; 14 cases were in men. This would give a percentage of 15.2 in individuals, nearly all of whom are native born, or who have lived for years in California. In one family five members have goiter, in another three. In a number of young women accompanying nervous symptoms seem definitely referable to thyroidism, but in the majority of instances the enlargement is without influence on the general condition.

Dr. Pope of Watsonville has noticed 12 decided goiters in 1,200 cases, but writes that small tumors are much more frequent. Reports from the southern part of the state (San Diego, Riverside, San Bernardino, Los Angeles, Santa Barbara, Kern, Tulare, Kings, and San Luis Obispo counties) would indicate that goiter is less common there than in the bay counties. Dr. von Zwalenberg of Riverside says it is much less common than in Michigan. Dr. Sanborn writes from Redlands that there are about 40 cases of moderate goiter in the practice of different physicians there. Los Angeles and Pasadena physicians report the condition uncommon, and men from Fresno, Tulare and San Luis Obispo as rare. Through the kindness of Dr. P. K. Brown, however, I am able to quote a letter from Miss Jacobs of the Los Angeles Normal School in which she says goiter is common in the young women in attendance, and that not a few report other cases in the family—one term 8 per cent. had enlargement of the thyroid.

The interior mountain counties of the central part of the state seem much less affected. Letters from Madera, Merced, Mariposa, Stanislaus, Tuolumne, Amador, El Dorado, Placer, Nevada, Sierra, Butte, Yuba, Sutter, Yolo, Colusa, San Joaquin report few cases. Dr. W. A. Briggs thinks moderate sized goiter fairly common in Sacramento county. Dr. Dempsey of Vallejo, Solano county, sees enlarged thyroid in 4 per cent. of his patients. Lake, Napa and Sonoma have few cases. Dr. Margaret Evans mentions a family in Calistoga, Napa county, four members of which have goiter. Of the northern coast counties Mendicino and especially Humboldt appear to show endemic goiter. Dr. Bond of Ukiah writes: "I can only state in a general way that thyroid enlargement is very prevalent in this vicinity, most cases being of American parentage and without symptoms. Dr. H. G. Gross of Eureka writes that he sees a number of cases practically all of which come from an area about ten miles long and three wide, partly in the valley and partly in the foothills. Dr. H. S. Delamere of Ferndale, within the district spoken of by Dr. Gross, says: "Thyroid enlargement is quite prevalent here." Dr. Jorgensen of Fortuna, Humboldt county, however, sees but few cases. Professor A. C. Lawson of the University of California, in a paper on "The Geomorphogeny of the Coast of Northern California," describes the peculiar formation known locally as the "Wild-Cat Series" that extends through Humboldt county. Its peculiarity depends on the softness of the beds in general, the frequent alternation of harder and softer rocks, and the deep erosion of the Eel River and its tributaries. It would be of interest to map out the goiter region with reference to this peculiar terrane. The entire peneplain consists of marine deposits, pliocene and post-pliocene, with a coastal strip of later mesozoic and tertiary rocks. The reports deal but slightly with questions of etiology—mention is made simply that most cases are seen in women and that enlargement of the neck has often been first noted during pregnancy. In several instances note is made that the goiter has enlarged with each pregnancy. No mention is made of goiter in animals, but I have seen it in one horse and two dogs in the past year.

MYXEDEMA.

Reports here are less equivocal. The bay counties again show the greatest number of cases partly on account of greater population, and partly because cases from a distance drift to San Francisco as a center. I have descriptions of 30 cases throughout the state. Tehama, Monterey, Sacramento, Santa Barbara, Riverside, Stanislaus, Marin, Yuba, Mendicino, Santa Cruz, Yolo, Kern and Colusa report one case each; Solano, Santa Clara, Butte, two cases; Fresno and Los Angeles three, and Alameda sends five. San Francisco physicians send accounts of 43 cases, without duplicating any of the reports from other counties as far as can be ascertained. Adding 10 of my own, there is a total of 53 cases from San Francisco, and 83 throughout the state. I have purposely omitted reports of doubtful cases, accounts of *formes frustes,* or descriptions of exophthalmic goiter with myxedema. In 50 cases in which mention was made of sex, 39 were women and 11 men. Age varied from 18 to 64. Thirteen had decidedly large thyroids, the myxedema resulting from changes in old goiters. In 22 the thyroid was not palpable, and no mention of the gland is made in 31. Of 55 ten were of foreign birth, but had been years in California. Twice the condition resulted from operation on goiter. Two of my cases were born in Norway. Two had spent some years in Alaska, and symptoms developed while there. Emphasis in description is laid chiefly on skin, voice, and mental changes and disturbances in locomotion. Three women had frequent epileptiform attacks which did not yield to thyroid medication, although skin and mental conditions improved. A woman reported by Dr. P. K. Brown had profuse menorrhagia before thyroid treatment was begun.

Some years ago I saw myxedema in a girl of 20 whose mother had just died of the disease. Skin of the face and over the extensor surface of the arms was thick and dry, there was a diffuse growth of hair over the face and arms that had appeared during the last year; the voice was remarkably deep and harsh, menstruation had ceased ten months. The fundus showed atrophy of the nasal side of both discs, and color vision was limited in the temporal half of both fields. In all probability change in the hypophysis was the cause of eye symptoms and perhaps of the hypertrichosis. Menstruation appeared under thyroid extract and the skin grew better, but the girl committed suicide and no autopsy was obtained. Uhthoff described blindness in a boy of 6 with myxedema; vision improved under thyroid, and this was attributed to shrinking of the hypophysis. Coppez describes retrobulbar neuritis from thyroid feeding, but no instance has fallen under my observation. Endeavor has been made chiefly by Brissaud, Murray and Pineles to distinguish between myxedema of thyroid and of mixed thyroid and parathyroid origin. They would attribute considerable influence to the parathyroids in determining sexual and mental changes. In cases with profound mental changes, therefore, we would look more closely for other signs of disturbed parathyroid function—particularly for evidence of tetany or convulsive seizures. Only one of my cases was mentally profoundly affected, and here the Chvostek and Trousseau phenomena were constantly absent. In one woman with most marked exophthalmic goiter and epileptiform attacks the Chvostek phenomenon was present on two examinations; partial thyroidectomy led to disappearance of all symptoms, no tetany developed, and the patient has been well three years.

FORMES FRUSTES.

Very interesting to me are the *formes frustes.* I have notes of 11 cases, 5 men and 6 women, all of whom presented the same clinical picture, and in whom definite improvement took place under thyroid medication. One was a woman of 35, two were men of about 45, and the others were from 55 to 65; the sister and daughter of one woman had goiter; one man and two women had small goiters. Such cases are fairly common in the literature of thyroid insufficiency. Some of these people have for years had dry skins, thin hair, pains between the shoulders, paresthesiæ, joint pains. In two of my cases influenza seemed a factor in precipitating thyroid symptoms—skin changes, nervous unrest and tachycardia. Most characteristic is the dry skin, scaling of the scalp, thinning of the outer half of the eyebrows, loss of hair on the neck and in the axillæ. Fat pads occur above the clavicles, and not infrequently there is a large pad over the upper dorsal vertebræ, a bib-like roll across the neck and upper sternum, thickening of the subcutaneous tissue across the lower ribs and above the elbows and knees on the extensor surface. Pains in the knees and ankles and occasional "giving away of the legs" are frequent. The voice has often a peculiar deadened husky quality.

Five instances of infantilism of the thyroid type described in detail by Brissaud, Meige. Hertoghe and others have come to my notice in the past two years. Two boys of 14 and 18 grew quickly under thyroid treatment, and showed increased development of pubic and axillary hair and of genitalia. One boy of 17 was excessively fat and had complications of muscle dystrophy and coxa vara. Another boy of 16 died of diabetes; thyroid extract had no effect on the sugar elimination. The fifth boy had acute nephritis and uremic convulsions.

SPORADIC CRETINISM.

In Osler's article on "Sporadic Cretinism in America" are included three cases from California, two of Dr. Hoisholt from the Stockton Asylum and one of Dr. Osborne from the Home for Feeble-minded Children at Glen Ellen. I have reports outside of San Francisco of 37 cases that from description [illegible] seem definitely examples of cretinism. [illegible] and chondrodystrophy cases are not [illegible]ssification. Of these, seven were born outside of the state in Mexico, Wisconsin, Illinois, New Zealand, New York, New England, and four have died. Doubtless the list can be extended by a more thorough canvass at some later day. Dr. Dawson, superintendent of the Home for Feeble-minded Children at Glen Ellen, Sonoma County, writes that there are several cases of idiocy of Mongolian type and a few cretins, but these are not included in the above. Physicians in San Francisco send me accounts of 28 cases, to which I can add 7 of my own, making a total of 61 cretins now living in the state, and all native born. The majority of reports chronicle absence of palpable thyroid enlargement. No valuable data as to etiology are available. Dr. Frances Sprague reports a girl of 2 from the Children's Hospital in San Francisco who died of general tuberculosis, with extensive tubercular changes of the thyroid. Dr. Millicent Cosgrave sends me notes of a girl of 5, born in New York. Mother and grandmother had goiter, and the maternal grandfather died of tuberculosis. The child seemed normal during the first year, and walked at 18 months, at 3 had measles and later tuberculosis of the glands of the neck. Since then she has not walked well, has backache, is nervous, skin dry and rough, appearance that of a cretin, is extremely stupid, abnormally developed—is as tall as a child of 10. Breasts, hips and limbs look like those of a girl of 16. The mental condition has improved under thyroid treatment. Brissaud calls attention to tuberculosis of the cervical glands as a cause of myxedema. In one of my cases symptoms developed soon after diphtheria. Dr. Dempsey of Vallejo reports seeing a cretin whose mother had a large goiter, with myxedema. Dr. Sprague mentions a girl of 14 with a big thyroid, another of her cases was but 18 months old. In a case of mine—a girl of 7—the parents were from the south of France. From the history, the father's sister was probably a cretin, and a brother of the patient died at 6 months in a condition suggesting cretinism. Dr. P. K. Brown tells me of two brothers born in San Francisco whose parents are German and perfectly well. In the greatest number of cases parents were born in California. In three instances parents were from the Azores, in two from Austria, in two from southern Italy, in three from Ireland. Detailed descriptions will be left to a later paper, but photographs of ten cases are now available.

EXOPHTHALMIC GOITER.

This affection would appear to be much more common in the counties about San Francisco Bay than in the other parts of the state. Dr. Emmet Rixford of San Francisco sends me notes of 8 primary cases and 3 secondary to goiter of years standing; Dr. T. W. Huntington, 5 primary and 8 secondary; Dr. W. I. Terry, 10 primary; Dr. J. H. Barbat, 10; Dr. Mac Monagle, 29. Physicians content themselves, as a rule, with saying that the affection is "common" or "decidedly frequent." Dr. Abrams has seen 30 cases. My own list includes 33 well marked cases of exophthalmic goiter, excluding *formes frustes.* Of these, 9 were male and 24 female; 7 occurred in patients with goiters of years' standing. Most observers agree as to the thyroid factor in the disease, but emphasize the influence of an unstable nervous system and the immediate effect of nervous shock. Dr. J. H. Barbat saw 3 cases develop acutely after fright. Some few years ago in the wards of Dr. Kerr in the City and County Hospital of San Francisco I saw an Italian with unusual history. Three weeks before, in perfect health, he had been out prospecting in one of the interior counties, had strayed off, and was lost in the mountains for two days. He was sick from that time, excited, restless, could not sleep, vomited, grew rapidly thin, had breathlessness, palpitation, trembling, could scarcely walk. Examination showed exophthalmic goiter, with cardinal signs, emaciation, terrifying unrest. For days he remained the incarnation of terror, but then slowly changed to the more uneventful stage of the disease.

In a woman under the care of Dr. Abrams, the father and brother showed symptoms of the disease. Two of my patients were mother and son and two brother and sister. The mother of one young woman under my care has myxedema. Dr. Crowley of Oakland reports exophthalmic goiter in mother and son. Dr. F. L. Adams of Oakland reports the disease in mother and daughter; the mother is from Derbyshire, a well-known center for goiter. Another of his cases gives history of the same affection in her mother and mother's mother.

In the reports of simple goiter, frequent mention is made of associated nervous symptoms, tachycardia, and tremor. These cases are similar to the ones described by Mikulicz and Rehnbach, by Kocher and others as instances of thyroidism associated with goiters of varying types. They form a transition to true exophthalmic goiter developing in individuals who for years have had goiter without symptoms. In a woman of 41, seen two years ago, there had been a marked goiter for 18 years; eight years before nervous symptoms became bothersome; there was exophthalmos, tachycardia, tremor. Swelling of the eyelids and a peculiar brawny infiltration of the side of the neck and face led to a diagnosis of complicating kidney disease, but this was not present. The swellings were analogous to the hardening of the skin of the face reported by J. Schulze, a firm infiltration not like true scleroderma nor yet of the consistency of myxedema. In a woman seen four years since, there had been a moderate goiter for years. During pregnancy signs of myxedema, as thinning of the hair, dry skin, supraclavicular pads, were reported to have developed and to have disappeared under thyroid extract. Unfortunately with continuance of the thyroid extract a typical exophthalmic goiter developed, which was marked by all cardinal signs when I saw her.

Breuer of Vienna and Gautier of Geneva have lately emphasized anew the occurrence of exophthalmic goiter after treating goiter with iodin preparations. Breuer cited a case developing after the use of K I—a syphilitic woman who had shown no previous struma. Rilliet, 1860, and Lebert, 1862, gave many instances of iodism in goiter cases. Theodor Kocher, in a recent article on "Die Therapie des Kropfes" in the *Deutsche Klinik*, gives a masterly review of the action and dangers of iodin compounds. His conclusions are based, in part, on the studies of iodin elimination in normal individuals and cases of goiter by A. Kocher published in vol. xiv of *Die Grenzgebieten der Medizin und Chirurgie*. He makes clear that most symptoms are due to thyroidism rather than iodism. With quick recession of a goiter, danger of intoxication greatly increases, but the disappearance of a struma is not necessary for production of symptoms. The smallest dose of K I may cause severe thyroidism in exophthalmic goiter or cause rapid emaciation in the newborn or in pregnant women. "In excited, unduly animated, thin individuals who always have congested faces. who tremble at nothing, get palpitation on the least occasion, and who sweat easily, one has to deal with beginning thyroidism, and one may cause outspoken exophthalmic goiter through careless use of iodin."

I have had several cases of iodism after small doses of K I in patients with small goiters, and now make it a rule to examine the thyroid and to look for signs of exophthalmic goiter before prescribing it. In one young man in whom K I, syr. acid. hydriod. and tr. iodi gave toxic symptoms, iodipin was given hypodermically with impunity, confirming the observations of Schuster and Lesser; it could be demonstrated in the tissues by x-ray plates six weeks after injection. According to Gautier, the source of plant and water iodin supply is the iodin "dust" given to the atmosphere by sea water. Rilliet of Geneva thought a change to the seashore might develop symptoms of exophthalmic goiter in patients with struma. It is an interesting speculation whether the number of cases about San Francisco are in any way due to the prevailing strong sea winds. It is certain that a few cases from the interior have done worse on the coast, and insomnia is apt to be a bothersome feature of the change. In eight of the reported cases there is noted a combination of exophthalmic goiter with myxedema, but description lacks sufficient detail to admit such classification. It is well known that edema and skin infiltration of different kinds may occur in pure exophthalmic goiter. Kocher describes a number of such cases. Dr. Rixford reported a remarkable case of a young woman of 29, who was married a few weeks before contracting scarlatina. Three months later a goiter, the size of a walnut, was observed. One year later there was rapid growth during pregnancy, and still greater enlargement after a second pregnancy two years later. General edema, tremor and choreic movements were noted, besides the usual symptoms. Edema rapidly disappeared after operation. In two of my cases, fat pads and hard infiltration of the skin over the lower ribs persisted after operation. In a discussion on "Internal Secretions" two years ago (reported in the *Clinical Journal*), Horsley described certain anomalous cases of myxedema, with a peculiar excitable mental state, inability to exert, symptoms of heart insufficiency, and fat pads or diffuse skin infiltration. He regarded them as combinations of athyroidism, with a certain amount of aberrant internal secretion, the "dysthyroidism" of Moebius. He advises in treatment almost total removal of the gland, and then supplementing its secretion with thyroid extract. I have under observation for two years and a half a woman who lived abroad years ago, for some time in centers of goiter, such as Geneva and the Pyrenees, and who for years had the nervous and heart symptoms of exophthalmic goiter. There has never been exophthalmos, but at times there is a fixed stare or glare that to me is rather characteristic. For six months the pulse was never below 100, and during attacks of palpitation 160 or more. There are at times remarkably large supraclavicular pads, such as are seen in myxedema, and a diffuse bib-like pad of the same tissue, feeling like half solidified fat, stretches across the front of the neck and down irregularly four or six inches below the clavicles and across the sternum. An apron of the same kind extends across the epigastrium and lower ribs. The case is similar to those reported by Horsley. Of chief interest is the variation of the condition under alternate treatment with rodagen and iodid of iron as described below.

Formes frustes of exophthalmic goiter would require a separate paper. There is danger in labeling too many indefinite nervous affections with this convenient diagnosis, which only a combination with cardinal symptoms should justify. I have seen enlargement of the thyroid, with nervous symptoms and tachycardia, the result of masturbation in young men. Since my attention was called to it by Ortner of Vienna, I have seen the same thing, the result of excessive tobacco smoking in boys. Of interest in considering eye symptoms of the disease are the reports of Arslau, Spiegler, and Holz concerning the occurrence of exophthalmos in adenoid cases and its disappearance after operation. During the last year Dr. C. M. Cooper and I have been testing the value of von Graefe's sign in diagnosis. It was curious to note the occasional development of this and Stellwag, with other symptoms of mild thyroidism, after administration of K I. Our results confirm the observations of Sharkey and of Flatau that the sign is frequently seen apart from thyroid disease. It was particularly common in Italians, probably because of the greater tendency to keep the eyes widely open while talking.

THERAPY.

The goiters seen here rarely demand operation on account of their size. Dr. Rixford, Dr. Terry, Dr. Rosenstirn, however, send me accounts of 20 operations for cystic or adenomatous goiter. The necessity of caution in the treatment of goiter, and particularly exophthalmic goiter, with iodin compounds or thyroid extract has been sufficiently emphasized above; the senseless administration of thyroid extract in large doses for obesity, arteriosclerosis, and other cases of supposed thyroid insufficiency should be discountenanced. Cunningham has attempted to prove that toxic symptoms are due to contaminating cadaveric derivatives and not to the active thyroid principle, and claimed that fresh glands may be given with impunity in exophthalmic goiter. The occurrence of well-marked exophthalmic goiter after administration of K I or iodothyrin in goiter cases would, however, speak decidedly for the theory of hyperthyroidization.

The reports of treatment in myxedema and cretinism are enthusiastic. It is usually not necessary to give large doses of a good thyroid preparation; in cretinism I begin with one grain daily and rarely go beyond 5 grains. Many myxedema patients need only small doses, even at first; some of them can not take more than 2 or 3 grains without disagreeable nervous symptoms. Dr. Ebright tells me of a man of 64 who had severe rheumatoid pains each time the dose was increased beyond two or three grains daily. Bramwell speaks of an acquired intolerance, and mentions a case in which large doses were well borne, but later even 1/20 of a tablet produced marked toxic symptoms. Paresthesiæ and other unpleasant symptoms may be modified by giving Fowler's solution at the same time. Opinions are in accord that preparations representing the whole gland can not wholly be replaced by the active principle iodothyrin. Bramwell, Magnus-Levy, Warner von Jaurenegg report encouraging results in the treatment of endemic as well as sporadic cretinism.

Until recently medical treatment of exophthalmic goiter was limited to electricity, hygienic measures, and a long list of drugs for symptomatic use. It is very difficult to judge of the efficacy of any method of treatment in an affection notoriously so uncertain in course and symptoms. I have seen good results from long-continued faradism, as recommended again of late by Horsley, the patients use the battery themselves for an hour or two daily, fastening the electrodes over the neck, front and back. With the treatment suggested by Wm. Thompson, I have seen no effect in marked cases. Strontium or calcium bromid—30 to 45 grains daily—or the bromid of quinin, 15 to 30 grains daily, as recommended by Forscheimer and Shattuck frequently modify nervous symptoms. Phosphate of soda, suggested by Trachewsky and indorsed by Kocher, or the glycerophosphate of soda, certainly control tachycardia and nervous unrest in not a few instances. Belladonna I prefer to digitalis or strophanthus; salicylates, sulphanilate of soda, intestinal antiseptics have availed little.

Despite reports of Goutschomkov and Mankovsky, endeavors to produce a specific thyreotoxic serum have as yet been abortive. Gley first suggested that deficiency of parathyroid function might be a chief factor in etiology of exophthalmic goiter. MacCallum found the parathyroids four times in eight operations for exophthalmic goiter; twice they were smaller than usual and twice degenerated; in one acutely fatal case none were found. Benjamins found them apparently normal in three cases. Moussu saw no result in one case from feeding parathyroids of cows. MacCallum reports feeding 12 glands daily for some weeks in a case of moderate severity without effect. From evidence yet at command it is not possible to say that the parathyroids in any way influence the affection.

It is not possible to dwell on results of operative treatment, though I am convinced that many cases belong to the surgeon. Five of my cases have gone to operation. In four improvement was almost immediate and the patients have remained well. One woman died four days after operation, with symptoms suggesting parathyroid insufficiency. It has seemed to me that more attention in operating should be given to the statement of Horsley, that division of the isthmus is sufficient to lead to retrogressive changes and shrinking in the rest of the gland. I have had no experience with the *x*-ray treatment as advocated by the Mayos and Beck.

In the last years effort has been made to develop a specific treatment of exophthalmic goiter. Ballet, Enriquez, and Lanz were pioneers in the movement. Lanz suggested that milk of dethyroidized goats might contain substances [illegible] exophthalmic goiter poisons. Burgh[illegible] from Leyden's clinic first used serum from a myxedema patient with encouraging result, and later introduced "rodagen," a precipitate from the milk of dethyroidized goats. Leyden, in *Die Medicinische Klinik*, reviews results attained and thinks them definitely favorable. Improvement is noted in three or four weeks, but treatment must be continued for months. Kollaritis reports three cases treated four to six weeks with rodagen without effect. Kuhnemann reports betterment in one case under 6 grams of rodagen daily. In 1901 Moebius communicated three cases somewhat improved by serum of dethyroidized goats. This has been put on the market by Merck and is given internally in 5-gram doses every second day, being administered in wine. Moebius has since reported benefit in 2 cases, Schultes in 1, Rosenfeld in 1, and Indermans, Boerma, Hempel, Lomer, Duerig, Peters, and Thienger in others. Thienger gives account of an acute case responding quickly to the serum, of two with improvement, and of one with no result.

Such a new method of treatment must be most conservatively judged. I have had experience with rodagen in three marked cases over periods of four to eighteen months. In one severe case, 6 grams daily were given for four months with no appreciable effect, and the woman was later operated on successfully by Dr. T. W. Huntington. In a woman with marked nervous symptoms, insomnia and tachycardia, all symptoms seemed definitely to improve under five months' treatment with 6 grams daily; the moderate exophthalmos is unchanged, but the pulse rate is normal and the struma is smaller. A third woman has been taking 6 grams daily, off and on, for eighteen months. She had suffered from tachycardia, insomnia and nervous unrest for years. Sodium phosphate, bromids, salicylates, bromid of quinin and electricity did not control symptoms, and she refused operation. She had supraclavicular fat pads and the peculiar skin infiltrations described above. Rodagen has seemed to control the pulse for months as nothing else did, and she is enthusiastic over its effect on insomnia. After four or five weeks of steady use, she complains of depression and weakness, and has to stop for two weeks. Fat pads increase during rodagen administration, and two or three times the experiment has been tried of giving her iodid of iron in small dose. This each time promptly brings return of tachycardia and nervous symptoms, but modifies skin infiltration. Rodagen would seem to be of some benefit in these cases, therefore, but I would pass judgment only after a long series of cases. My experience with thyreodectin has been too limited to report. Dr. W. F. Cheney mentioned a case in which it seemed to control the heart symptoms. Dr. P. K. Brown tells me of a woman who grew worse rather than better under four or five weeks' treatment.

The whole question of the thyroid and its influence on development, metabolism and decay is a fascinating one. It would be valuable to report more fully the early history of patients with myxedema and exophthalmic goiter, to classify more carefully early heart, digestive and skin symptoms of the latter affection. I have seen two paroxysmal tachycardia cases that developed later exophthalmic goiter. In one woman peculiar general pigmentation with vomiting, diarrhea and weakness had led to diagnosis of Addison; Oppenheim mentions a similar case. I have under observation a man with Parkinson who presents thickening of the skin of face and extremities as described by Fraenkel and Lundborg. A woman who has twice had eclampsia came to me with a large thyroid and symptoms suggesting beginning myxedema; she is interesting in view of the work of Nicholson, Lange and others on the relation of thyroid to eclampsia. The possible influence of the thyroid in California as an etiologic factor in our very common arteriosclerotic and renal affections should be remembered.

DISCUSSION.

Dr. James J. Walsh, New York, stated that he has tried the effect of paratyphoid extract, though without getting very encouraging results. About three years ago Dr. McCallum of Baltimore suggested a connection between the parathyroids and the symptoms of Graves' disease. Many years ago Professor Gley made investigations on this subject, and came to about the same conclusion. It seemed thoroughly justifiable then to try the effect of the drug. Dr. Walsh treated four patients. In two milder cases the parathyroid seemed to be of benefit. In two severer cases, it not only gave no relief, but seemed to make some of the symptoms worse. It is doubtful if the parathyroid extract was entirely pure and free from thyroid material, although every effort was made to secure it in the pure state. It must not be forgotten, he said, that younger patients, that is, those under 25, frequently get better, even with marked symptoms, under almost any treatment. It is surprising to note how severe some of the cases are and how complete the recovery. Intermissions are extremely common, and may well be attributed to treatment when they are only phases of the disease. In older patients intermissions are rarer, and it is on these that new remedies must be tested if there is to be any reliance on the results.

Dr. E. F. Wells, Chicago, said that it has been his fortune to see many cases of exophthalmic goiter, and no patient who had been treated for any considerable time before coming under his observation, but had been given thyroid extract, and invariably with the effect of increasing the symptoms. He is sure that there is an impression in the profession that thyroid extract is the remedy for exophthalmic goiter, and a warning as to the danger attendant on such treatment is eminently desirable. Empirically, Dr. Wells has found that codein is extremely useful in these cases. He gives from one-quarter, one-half or three-quarter grain three or four times a day, and for months with perfect immunity. The patients bear it well. After an experience with this remedy for eight or ten years, he is led to advocate it as the most efficient for the purpose of any which he has any knowledge.

Dr. G. W. McCaskey, Fort Wayne, Ind., emphasizes the importance of noting the spontaneous fluctuations that occur in some of these cases of a very chronic character with any line of treatment and sometimes without any treatment. He has had two patients under observation for a period of ten or twelve years, which have exhibited these peculiarities to a striking degree. At times they appeared symptomatically well, and one of them has remained so for one period of two or three years, but in both cases the characteristic syndrome has infallibly returned. Due allowance must be made for these variations in estimating the value of treatment.

Dr. George S. Whiteside, Portland, said that the type of thyroid enlargement seen in Oregon is a very mild one and much more prevalent among women than men, and more among the young than the old. As a rule, these patients present no symptoms. The condition seems to increase at the time of pregnancy, and goes down afterward. Goiter in dogs is not uncommon in Portland. Exophthalmos seems to be the exception in both men and beasts in Oregon, but Dr. Whiteside has heard that it is much more common in California.

Dr. C. R. Grandy, Norfolk, Va., thinks that there are many more cases of enlarged thyroids in the United States than were formerly thought, simply because physicians had not been looking for them. In his own practice he has seen a considerable number of cases. When occurring in young girls he does not do anything for them. There is one class of goiter with a decreased secretion, which, as a rule, occurs in fat women with slow pulses. In such cases thyroid extract would do good. In the other class of cases there is an increased secretion which occurs in nervous people, with fast pulse rates, etc. Here the thyroid extract does harm. Dr. Grandy has seen two rather remarkable cases occurring in women past the menopause, in both of whom hysterectomy had been performed for fibromyoma for several years previously. In one there appeared to be a malignant change in the thyroid. The other woman passed from observation. In both cases there was not enough thyroid secretion; one patient seemed to improve with thyroid extract; the other had some of the symptoms of myxedema.

Dr. J. A. Lichty, Pittsburg, Pa., agreed with Dr. Moffitt that it is a difficult thing to make a diagnosis when there are so few symptoms; and yet he knows of no disease in which an early diagnosis is so essential as in exophthalmic goiter. A great deal of harm may be done in a very short time if the disease is not recognized. There may be several so-called cardinal symptoms, but only these are necessary to make a diagnosis, i. e., rapid pulse, tremor and exophthalmos. If any two of these are present it is perfectly safe to place such a patient on treatment for exophthalmic goiter. If the patients are young girls, who are fond of dancing, bicycling, gymnastic work, etc., they should be warned of the danger and the harm that might result because of an existing exophthalmic goiter. These exercises should at once be forbidden. Dr. Lichty has tried the *x*-ray treatment without any benefit in these cases. During the past ten years he has cured two patients with the rest treatment. He emphasized the importance of an early diagnosis in exophthalmic goiter.

Dr. Christian Jonsson, Clinton, Iowa, said that young people seem to have a tendency to spontaneous recoveries, and that this disease seems to be more dangerous in old people. He has observed that thyroid gland treatment is extremely harmful in most of those cases, and it is his conviction that it should never be used in exophthalmic goiter. The treatment should consist in rest and freedom from worry, besides a tonic and sedative drugs, such as we have in a so-called sumbul tablet, containing iron, arsenic, sumbul, asafetida. In a number of cases this has given Dr. Jonsson surprisingly good results.

Dr. Herbert C. Moffitt, San Francisco, declared that he did not agree with Dr. Walsh that cases of exophthalmic goiter in old people necessarily go wrong. He has seen not a few such patients kept comfortable by routine medical treatment, giving clinical evidence of further thyroid changes and slipping slowly from symptoms of exophthalmic goiter to those of myxedema. He mentioned one case in which stomach and intestinal symptoms were so marked that the affection was considered primarily a stomach one. After instituting the proper treatment the patient, a woman nearly 60, went along well, and is now showing signs of myxedema. The pulse rate is normal and the skin changes are those of myxedema. Dr. Moffitt is of the opinion, in the light of our present knowledge, that marked cases of exophthalmic goiter are helped but not cured by medical treatment, and that such patients should be referred to the surgeon.

REPORT OF COMMITTEE TO AID POSTOFFICE DEPARTMENT IN EXCLUDING OBJECTIONABLE ADVERTISING.*

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CHICAGO.
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AND
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PHILADELPHIA.

The following details concerning the work of the Postoffice Department, so far as it has involved the drug laboratory, present some of the problems which may be of interest:

THE ROBUSTO CASE.

All members of this Section are probably familiar with the "Robusto" case, full details of which were published in a recent number of The Journal A. M. A. In that report is clearly set forth the ignorance and stupidity of the promoter and the fraudulent nature of the advertisements. One statement in the advertisements is "there is no disease which Robusto will not cure." The would-be patient was led to believe that he was to receive medicines which were progressively increased in strength as the time of treatment continued. It was clearly shown on the witness stand that no such system was in vogue at any time by the promoter. In the case of "Robusto," there was at no time any question relative to the efficacy of the medicines employed, but the gross misrepresentations were abundant on every hand. This case presented numerous problems that we are confronted with in the case of many remedies of a similar character, but each one presents new problems to solve. For example, one promoter will claim that his remedies are new, were invented by him, are applied in a novel way, or that particular combinations produced wonderful results. The most difficult cases we have to deal with, however, are those involving results obtained by electrical appliances. It is very well known that electricity is a valuable agent in assisting in bringing about cures, but just to what extent this can be accomplished is at present largely an uncertain quantity.

OTHER SIMILAR CASES.

A few more cases similar in character, may serve to illustrate.

Dr. Stevens & Co. presented a host of medicines, largely in the form of crayons, with the contention that they were novel, in that the medicinal agent was applied directly to the affected part and in this way brought about wonderful effects. This firm also claimed that they were the originators of murituama, protargol and hyoscin bromid. One of the extremely interesting tactics of this firm was the sending of a strip of "medicated paper," advising the patient to dip the same in his urine and to return it to the company, and from it the company would make a diagnosis and inform the patient relative to the nature and seriousness of his condition. The strip of "medicated paper" proved to be nothing but litmus paper. It is almost beyond conception that a medical man, for there were medical men connected with this company, would stoop to such a downright misrepresentation.

Another firm claims to be able to cure almost all the ills that the flesh of man is heir to by a simple purgative consisting of powdered mandrake, powdered aloes, powdered capsicum and spearmint.

The Force of Life Chemical Co. claims to restore "lost manhood" and "lost vitality" by a progressive treatment consisting of a liquid containing as its chief constituent lecithin, which is present, but an examination of the remedy shows that all the packages are virtually of the same composition. This company claims to cure many infirmities by what is called by them "radium capsules." These capsules are found on examination to be free from radium.

Another great fraud met with is "aquamiel," a product claimed to be made from a Mexican plant, possessing most marvelous healing properties, and in particular stimulating the growth of the mammary gland. An examination of this product showed that it consisted of two strengths, one containing 2 per cent. of alcohol and the other 8 per cent., with 0.5 per cent. of plant extractive, the liquid being colored with caramel and sweetened with saccharin.

A Detroit firm submitted many medicinal agents, among which was a tablet consisting of capsicum, which, according to directions, was to be dissolved in water and applied to the organ as necessity required.

A product called "predigested olive oil" was also met with. The olive oil, however, was not predigested.

"Cupidene" consisted largely of red pepper, cantharides and a bitter principle.

"Ambaline" consisted for the most part of different ammoniacal salts dissolved in water.

"Liquid electricity" was another catchy term. The active constituent of this preparation consisted largely of red pepper, ammoniacal salts and volatile oils in an aqueous solution.

COMPLEXION POWDERS.

We also have to report on complexion powders and complexion tablets. One complexion powder consisted wholly of Rochelle salts. A complexion tablet consisted of extract of nux vomica, calcium carbonate and reduced iron. The unfortunate part connected with this remedy is that its promiscuous distribution was the cause of the death of a child. This was brought about by the present possibility of transmitting remedies of this character through the mails without requiring them to be marked in any way so as to inform the recipients of their poisonous nature.

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* Read in the Section on Pharmacology of the American Medical Association, at the Fifty-sixth Annual Session, July, 1905.

RULING OF THE POSTOFFICE DEPARTMENT.

For some time, it was ruled by the Postoffice Department that the transmission of poisons through the mail was prohibited. It appears pressure was brought to bear on certain officials, and as a result the following ruling was put in effect:

"Proprietary articles of merchandise, not in themselves unmailable, such as fancy soaps, tobacco, pills, tablets or other preparations such as are used by the medical and pharmaceutical professions, put up in fixed quantities by the manufacturer, for sale by himself and others, which may be sealed in such manner as to properly protect the articles, but to allow examination of such package in its simplest mercantile form, will be accepted for mailing; provided, that poisonous articles, or articles containing poison, and not unmailable, shall be accepted for mailing only when the package bears the label or superscription of the manufacturer of or dealer in the article mailed."

Under this ruling, it is possible to send any poison through the mail provided it is used by the medical and pharmaceutical profession and is put up by a physician or pharmacist in fixed quantities for sale by himself or others. It seems that it would be well to call the attention of the postoffice authorities to this matter and inform them it is the law in almost all states that poisonous remedies of the above character must be marked with poison labels indicating their dangerous character. Of course, it probably would be unjust to withdraw the privileges of the mail entirely from remedies of the above character, but the public ought to be protected in some way by suitable labeling at least.

"Skin-bleachers" have also received some consideration at our hands. The active constituents of these preparations consist for the most part of corrosive sublimate mixed with such articles as glycerin, tincture of benzoin and water. The effect of such a mixture is well known to all physicians. It is claimed by the promoters that they are able by the use of these mixtures to turn a black skin-white.

The colored race comes in for an additional "soaking" by firms who claim to make curly hair straight by ordinary ointments and oils.

OTHER FRAUDULENT REMEDIES.

One of the most interesting fraudulent remedies claiming to restore "lost vitality" is "Yousouf's celebrated Turkish salve," which an analysis showed to be nothing but a preparation of petroleum containing approximately 20 per cent. of beeswax.

The action of methylene blue is taken advantage of in many cases, and one firm claimed that if the patient would forward a colored "medicated cloth" (which proved on examination to be nothing but cheese cloth). after moistening the same with his urine, they would submit the colored cloth to an examination and report the nature of the disease to the patient.

INTERPRETATION OF THE LAW.

We wish to call attention to several different points that have been encountered and which at present can not be acted on, first, because of the marked division of opinion among the medical profession. and. second, because of the present construction placed on the law governing the use of the mails by the Department of Justice.

The first point is illustrated by a specific case involving a solution containing a very minute quantity of an organic copper salt, glycerin, phosphates, and, the manufacturer claimed, heroin, which could not be found. The greatest value of this remedy, it was claimed, resided in the very small percentage of copper it contained, which, it was held out by the manufacturer, was a remarkable cure for consumption. An investigation among the best medical authorities showed that they were all ignorant regarding the usefulness of an organic copper salt in the cure of this disease. Literature, however, showed that a number of remarkable cures had been effected by several French physicians, and there was nothing to do but to give the manufacturer the benefit of the doubt and permit him to continue his practice.

Attention is called to the fact that there are at present many remedies that are highly fraudulent and which are relieving the poor people of much of their hard-earned money. The concerns manufacturing these, however, can not be successfully attacked because they have transacted their business in such a way as to come within the rulings of the Department of Justice in the distribution of their remedies.

This ruling is somewhat as follows:

"The privilege of the mail can be withdrawn from parties only when they are using the mail for the distribution of their goods or the reception of money directly from their patients, or both."

There are many that are taking advantage of this situation, chief among which is that much-advertised and highly deceptive product known as "Liquozone."

It might be well to consider the desirability of placing these conditions before our legislators, but the chief difficulty is the point made by certain government officials that many of our senators and representatives are using remedies of this character in their own homes and believe that they have merits.

It would be a gracious thing on the part of the American Medical Association to encourage the Postmaster-General and the Secretary of Agriculture in prosecuting this line of work and to inform them of hearty support and the full co-operation of the Association.

It is difficult to say approximately what amount of money has been thrown into proper channels by withdrawing the privileges of the mails from many dishonorable concerns during the past two years. This, of course, has brought some ill feeling on the part of certain manufacturers who are recognized as of good standing, some of whom have come out and declared that these firms to whom they were supplying goods were legitimate and honorable. and that they could see no reason why they should be interfered with in any way.

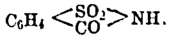
THE INFLUENCE OF SACCHARIN ON THE DIGESTIVE ENZYMES.

S. A. MATHEWS and HUGH McGUIGAN.
CHICAGO.

Saccharin is of interest both from physiologic and economic points of view. Its extensive use as a sweetening agent in canned fruits and vegetables, in syrups, chewing gums, confections, etc., makes it of general dietetic importance. It is also a very common ingredient of lotions, especially of mouth washes. Its use in the diet of diabetics, where sugar can not be tolerated. gives it some importance in medical dietetics. The fact that the food laws of many states prohibit its indiscriminate use, and consider it more or less as a harmful adulterant, makes it incumbent on the pharmacologist to investigate its action on the body; the purpose of the investigation being to find out whether or not it exerts a deleterious influence.

CHEMISTRY AND PROPERTIES OF SACCHARIN.

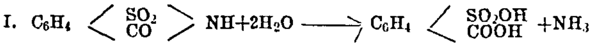
Saccharin is the imido derivative of ortho-sulphobenzoic acid and is represented by the following formula:



$$C_6H_4<\begin{smallmatrix}SO_2\\CO\end{smallmatrix}>NH.$$

It dissolves with difficulty in cold water and slightly more in hot water. Its sodium salt is readily soluble in water at all temperatures. Saccharin possesses an extremely sweet taste, given usually at from 300 to 500 times as sweet as cane sugar. It is this characteristic sweet taste that makes its use so widespread. Most commercial manufacturers of the substance make much of this point in advertising their product.

For the detection of saccharin it is extracted with ether, or with a mixture of ether and light petroleum spirit. After evaporation of the solvent the intense sweet taste is characteristic. As a confirmatory test a part of the residue is treated with concentrated KOH or NaOH and the dish heated until the mass fuses and is maintained thus for about half an hour. By this means the saccharin is converted into salicylic acid. This can be recognized by its crystalline form, melting point and reaction with ferric chlorid. The reactions on fusing can be represented thus:



$$\text{I. } C_6H_4<\begin{smallmatrix}SO_2\\CO\end{smallmatrix}>NH+2H_2O\longrightarrow C_6H_4<\begin{smallmatrix}SO_2OH\\COOH\end{smallmatrix}+NH_3$$

$$\text{II. } C_6H_4\,(SO_3)\,COOH+2KOH\longrightarrow C_6H_4\,(OK)COOK+H_2SO_3+H_2O$$

On acidifying and extracting with ether, free salicylic acid is liberated from the salt. If salicylic acid is formed in this way outside the body, we thought there was a probability of its formation within the body. It is well known that many reactions which require high heat and the aid of strong acids or alkalies outside the body can take place readily when subjected to the energy of the body cells. On the other hand, benzol compounds in general leave the body in other well known forms. In our experiments, which are given below, we found that not a trace of salicylic acid was formed and that saccharin left the body entirely unchanged.

METHOD OF DETERMINING THE CONDITION IN WHICH SACCHARIN LEAVES THE BODY.

A solution of saccharin (garantose) was prepared by dissolving a known amount in water, by the aid of sodium carbonate. Just sufficient carbonate was used to dissolve the garantose and at the same time keep the reaction of the solution neutral, or very slightly alkaline. The solution was made to a known volume and injected slowly into the femoral vein of a dog. It was allowed to remain in the circulation from two to six hours, and then was washed out through the kidneys with a diuretic —M_8 Na_2 SO_4. The urine was collected from the ureters, and the amount of saccharin determined by converting it into salicylic acid. By this method we found that when we used from .25 grm. to .5 grm. garantose we could obtain 90 to 95 per cent. of the theoretical amount of salicylic acid in the urine. As commercial saccharin is not chemically pure it is necessary as a control to determine the amount of salicylic acid it will yield. The amount of the diuretic necessary to wash out all, or practically all of the saccharin can be approximately determined by taste. When about 150-200 cc. of the solution of urine and diuretic has been collected from the ureters, the fluid is practically all Na_2 So_4, and fails to give the test for saccharin. It is then made to a known volume and aliquot-portions used in the analysis.

ACTION ON THE BLOOD.

A neutral solution, prepared as above, and containing .25 grm. was injected into the femoral vein. After two hours some blood was withdrawn and its action on hydrogen peroxid tested. Normal blood from the same animal was used as a control. The results are as follows:

I.	II.
2 c.c. blood (sacch.)	2 c.c. Blood (normal).
10 c.c. water.	10 c.c. water.
2 c.c. H_2O_2.	2 c.c. H_2O_2.
Gas given off in 30 minutes:	
12 c.c.	13.5 c.c.
Gas in 2 hours:	
14 c.c.	14.0 c.c.

The only action here is a slight retardation of the oxidation.

In a second experiment normal blood was taken from the carotid artery and dry saccharin added to it.

I.	II.
2 c.c. blood.	2 c.c. blood.
0.1 gm. sacch.	3 c.c. H_2O_2.
3 c.c. H_2O_2.	
Gas in 10 minutes:	
18 c.c.	27 c.c.

Here the larger amount of saccharin causes a marked diminution in the oxidative power. On standing a longer time only a slight change was found in the relative and absolute volumes given in the table.

ACTION ON THE OXIDATION OF SUGAR IN THE BLOOD.

Every animal can oxidize a certain amount of a monosaccharid if it is injected directly into the circulation. The total amount that can be oxidized before sugar appears in the urine can be called the oxidizing coefficient of the animal. This amount will, of course, vary with different sugars, depending on the ease with which the sugar can be oxidized. In other work one of us (McGuigan) found that levulose is very much easier oxidized than any of the other common sugars. Consequently in this work we started with levulose. If the oxidizing power of the animal is lessened by the injection of saccharin—a fact which we have shown fully—then less sugar can be oxidized by an animal with saccharin in its blood than can be oxidized by a normal animal. To test this point we selected two dogs of about equal size and age. Dog 1 was used as a control. A solution containing 15 grms. levulose and 1 grm. sodium bicarbonate made to 500 cc., was injected into the femoral vein at the rate of 10 cc. every 5 minutes. Sugar commenced to appear in the urine when 250 cc. had run in. No sugar appeared before this time. The same strength of sugar solution with the addition of 2 grms. of garantose to 750 cc. of the solution, was run into the femoral vein of Dog 2 at the same rate as in Dog 1. Sugar appeared in the urine in this case when 140 cc. had been injected. If we assume that the dogs possessed the same oxidizing power, then clearly the addition of garantose materially lessens the oxidative power. This is corroborated by the rest of our work and is strikingly brought out by the work of Bornstein[1] We are aware that most diuretic salts and many anesthetics will produce a condition of glycosuria, and have been careful to avoid the use of such. In all this work chloretone was used as the anesthetic. In this last experiment no diuretic was used.

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[1] Zeit. für klinische Medicin, vol. 40 p. 208. This reference also contains a résumé of the literature of the work on saccharin.

INFLUENCE OF SACCHARIN ON THE FERMENTATION OF SUGAR.

The urine containing levulose from the above experiments did not ferment with yeast. A solution of pure levulose was then tried and it fermented rapidly. If, however, a slight amount of saccharin was added, fermentation was entirely inhibited. Garantose is only slightly soluble in water; it is yet sufficiently soluble to prevent fermentation. This point is worthy of consideration in diabetic diets.

INFLUENCE ON THE WORKING OF SALIVA.

The influence of saccharin on the diastatic action of saliva is more pronounced than on any other enzyme of the body. Even traces exert an enormous retarding influence, while larger quantities *completely* arrest the action of the enzyme. This is shown by the following experiments:

	I	II	III	IV	V
Dry sacch. grms.	.2	.1	.05	.01	0
Saliva, c.c.	2	2	2	2	2
Starch paste, 2 per cent., c.c.	5	5	5	5	5

The solutions were mixed in vitro and placed in a thermostat at 40 degrees C. The results were as follows:

V—All digested in 8 minutes.
IV—All digested in 16 minutes.
III—All digested in 40 minutes.
II—Only trace digested in 360 minutes.
I—No digestion in 360 minutes.

The point when digestion was completed was indicated by the iodin test. No digestion was shown by failure to reduce Fehling's solution.

ACTION ON PEPTIC DIGESTION.

A 1 per cent. neutral solution of saccharin was prepared and the following experiments carried out:

	I	II	III	IV	V	VI
Pepsin, 2 per cent. acid reaction c.c.	4	4	4	4	4	4
Sacch. sol., c.c.	5	4	3	2	1	0
Water, c.c.	1	2	3	4	5	6
Fibrin, grms.	2	2	2	2	2	2

The above were shaken in test tubes and placed in the thermostat at 40 degrees. Results:

VI—All digested in 45 minutes.
V—All digested in 60 minutes.
IV—All digested in 85 minutes.
III—All digested in 100 minutes.
II—All digested in 130 minutes.
I—All digested in 350 minutes.

The retarding influence here is very apparent.

ACTION ON TRYPTIC DIGESTION.

Experiments were carried out with commercial pancreatin; *with fresh pancreatic extracts* and with pancreatic extract mixed with extract of the duodenum (dog). The proteolytic action of pancreatin and extract of the pancreas alone was only slightly affected by the addition of small amounts of saccharin. The diastatic action is materially decreased by the addition of saccharin, though not to so great an extent as the diastatic action of saliva. The most striking results are obtained when extract of the pancreas and duodenum are mixed.

An extract of the pancreas and duodenum of a dog was prepared by grinding the organs to a pulp and macerating 30 minutes with a 5 per cent. $Na_2 CO_3$ solution. The extract was then filtered and added to fibrin as follows:

	I	II	III	IV	V
Filtered ext., c.c.	5	5	5	5	5
Sacch. dry grms.	.1	.05	.02	.01	0
Fibrin, grms.	1	1	1	1	1

The mixtures were placed in the thermostat at 40 degrees C. and observed at short intervals, with results as follows:

V—All digested in 45 minutes.
IV—All digested in 105 minutes.
III—Almost digested in 270 minutes.
II—About half digested in 270 minutes.
I—Practically no digestion in 270 minutes.

No observations were made again for twelve hours, when the same condition was found as at the end of 270 minutes. These results indicate clearly enough the inhibitory action of the substance on pancreatic digestion.

ACTION ON THE OXIDATIVE POWERS OF MUSCLES AND GLANDS.

The muscular and glandular tissues of the body will all liberate oxygen from hydrogen peroxid. The amount of oxygen liberated by a given amount of the dried tissue is roughly proportional to its oxidative powers. If saccharin is added, the oxidation is lessened; if sufficiently large amounts are added, the oxidative power is entirely overcome. This influence is illustrated by the following experiments:

The tissues were prepared by grinding the fresh material to a fine pulp and macerating in 95 per cent. alcohol for 24 hours. It was then filtered, washed with alcohol and ether and dried in the air. After drying it was ground very fine and run through a fine sieve. The first experiment was with rabbit's muscle, 2 grms. in each:

	I	II	III	IV
Dry sacch., grams	.1	.05	.01	0
Water, c.c.	5	5	5	5
H_2O_2, c.c.	2	2	2	2
C.c. gas in 5 minutes	0	0	.8	2.5
C.c. gas in 10 minutes	0	0	1.5	3.4
C.c. gas in 30 minutes	0	0	2.0	5.5
C.c. gas in 60 minutes	0	0	2.2	5.8

In a second experiment rabbit's liver was prepared in the same way; using .2 gms. gave the following results:

	I	II	III	IV	V
Saccharin, grams	.2	.1	.05	.01	0
Water, c.c.	5	5	5	5	5
H_2O_2	2	2	2	2	2
Gas in 5 minutes	0	0	2	4.5	12.0
Gas in 10 minutes	0	1.5	3.0	6.0	15.0
Gas in 30 minutes	0	2.5	3.8	8.0	17.2
Gas in 45 minutes	2	2.6	4.8	9.6	18.0
Gas in 60 minutes	2	3.0	6.5	12.4	19.0

In Experiment 3, dog's muscle and liver were treated in the same manner, with the following results:

DOG'S LIVER, TWO-TENTHS GRAM IN EACH.

	I	II	III	IV
Sacch., grams	.1	.05	.01	0
Water, c.c.	5	5	5	5
H_2O_2, c.c.	2	2	2	2
Gas in 5 minutes	0	0	1.5	4.0
Gas in 10 minutes	0	0	2.3	5.5
Gas in 20 minutes	0	.5	4.0	8.5
Gas in 40 minutes	0	1.0	5.2	9.5
Gas in 60 minutes	0	1.8	6.8	9.6

DOG'S MUSCLE, TWO-TENTHS GRAM IN EACH.

	I	II	III	IV
Sacch., grams	.1	.05	.01	0
Water	5	5	5	5
H_2O_2	2	2	2	2
C.c. gas in 5 minutes	0	0	1	2
C.c. gas in 15 minutes	0	0	1.5	2.5
C.c. gas in 30 minutes	0	0	2.0	3.0
C.c. gas in 45 minutes	0	0	2.5	3.5

From these results it is evident that saccharin in small amounts retards oxidation, and in larger amounts prevents oxidation both in herbivorous and carnivorous animals. These results agree fully with those of Bornstein,[1] who found that the administration of saccharin caused an increased elimination of total nitrogen. The amount of nitrogen in the urine was less than before the using of saccharin, but the amount in the feces was greatly increased, so that the average of the two was greater than before using it. This means either a decreased hydrolysis or a decreased absorption of proteid, or both. As a matter of fact, Bornstein proved that absorption was materially lessened by the use of saccharin. He also observed that on those days in which he used it he suffered from headache and other symptoms of gastrointestinal derangement.

The experiments recorded above confirm the work of Reigler,[2] although it seems that we noted a more powerful action than that reported by him. This is undoubtedly due to the using of different brands of saccharin. In our work we used the "garantose" handled by Merck & Co. Reigler used that manufactured by Fahlberg, List & Co. The commercial products vary in strength, and to obtain uniform quantitative results a chemically pure preparation must be used.

PHARMACOLOGY OF SACCHARIN.

Saccharin is used in medicine solely on account of its sweetening properties. As we have shown, it has a retarding influence on the action of the digestive juices, especially that of the saliva and pancreas. Its prolonged use would, therefore, tend to produce digestive disorders. When injected into the circulation of an animal it produces depression and stupor, followed by labored respiration similar to asphyxia. This is evidently due to its inhibitory action on the enzymes in the blood and also in the tissues in general. This action very probably accounts for the headache and other symptoms which follow its use. Like many of the other benzol compounds, it may be considered a general protoplasmic poison, in that it inhibits nearly all the fermentative processes of the body. Consequently it interferes with and decreases the general body metabolism.

LEPROSY, BLASTOMYCOSIS, LUPUS, SYPHILIS, ALOPECIA AREATA, LUPOID SYCOSIS.*

JAMES NEVINS HYDE, M.D.
Professor of Diseases of the Skin, Rush Medical College.
CHICAGO.

LEPRA TUBEROSA.

Case 1.—J. G., male, aged 20, a native of Russia, came to this country six years ago, and has since that date lived in one of the western states contiguous to Illinois.

History.—Three years ago he began to suffer from a series of febrile attacks, accompanied by chills and by eruptive symptoms of an erythematous type, which were supposed to be syphilitic in character and for which he was subjected, without remedial results, to a course of specific treatment. Aside from the symptoms referred to, he has enjoyed fair health. There is no history of venereal disease; he has occasionally indulged in tobacco smoking; his family record is good. His father, who accompanies him, is a healthy-looking, though somewhat undersized, Polish Jew.

Examination.—The face of the patient is seen to be the seat of a diffuse infiltration, chiefly conspicuous about the nares, the brows, the lips, and the ears. The infiltrated area, though diffuse, is studded here and there with smaller and larger tubercles. There is marked alopecia of the brows. On the forearms, hands, legs, and the dorsum of the feet, there are larger and smaller poorly defined areas of punctate pigmentation; and here, as also where no such coloration exists, there are areas distinctly insensitive to hot and cold applications and to the prick of a pin. On the extensor surface of the left wrist is a large, coin-sized keloid developed from a burn which, he states, at the time of its infliction, produced no pain. The ulnar nerves are enlarged and somewhat corded, but the ascending great auricular nerve is not involved. This special nerve is said to be implicated in nearly 90 per cent. of similar cases, and its induration is readily demonstrated in the patient whom I shall next present to you. There is a deep, funnel-shaped ulcer in the sole of the left foot corresponding in character with the symptoms of *mal perforant du pied.* This young man has had frequent attacks of epistaxis. The mucous membrane of the nasal cavity is studded with small pin-head-sized and larger tubercles and irregular, shallow ulcers, thus explaining largely the catarrhal symptoms of which he complains.

This patient was first examined on Dec. 4, 1904, at which time a small nodule was excised for examination. The section when stained exhibited numerous lepra bacilli and the same micro-organisms were thickly dispersed in a smear of the nasal secretion.

Points of Special Interest.—Though presenting typical and unmistakable symptoms of tubercular leprosy, with an admixture of lesions commonly found in anesthetic types of that disease, this patient presents several points of special interest.

His youth and the relatively brief period of time during which he has suffered from the disease may be named first in order. These promised well if an appropriate therapy were instituted. He was placed on chaulmoogra oil, beginning with five minims in a glass of milk administered three times daily, the dose being progressively increased to nearly a teaspoonful. With this were administered ferruginous tonics; and a carefully directed hygiene was insured.

The results have surprised all who have watched the progress of the case. The general appearance and health of the patient have greatly improved. The skin is fairer, less muddy, less infiltrated. Over the brows the tubercles are now scarcely evident. The catarrhal symptoms are less severe. The only feature of his case in which there has not been corresponding improvement is the plantar ulcer. This we shall treat surgically.

Second: The origin of the disease. The youth almost certainly contracted leprosy in Russia. Instances of this malady, originating in the United States, are, indeed, few. My colleague, Dr. Ormsby, has reported one such case, the patient having been exhibited to this clinic last year. In his published report of this case, Dr. Ormsby makes reference to the case of the child of a leprous patient presented by me before this clinic several years ago, in which it seemed highly probable that the child, a native American, contracted the disease, presumably from the father, in the state of Nebraska.

Third: The demonstration of lepra bacilli in great numbers in the nasal secretion would seem to argue in favor of the opinion long sustained by Dr. Morrow, of New York, that most cases of leprosy are contracted by the medium of nasal secretions. It should be added, however, that in most of the leproseria visited by me the organs, apart from the skin and viscera, most frequently involved were without question the eyes. The number of blind lepers in any asylum devoted to this class of patients is pitifully large.

Case 2.—This patient, F. B., aged 27 years, a native of Australia, left his home seven years ago to become a sailor.

History.—In the course of his voyages he has visited Ceylon, India, Norway, Sweden, China, and the West Indies, and has lived an irregular sexual life in all these countries. At one time he was associated with a bunk-mate supposed to have the same disease and with whom he occasionally exchanged clothing. It appears, however, that before he left Australia an odd-looking "patch" appeared on his back, which may possibly have been the first symptoms of the disease with which he is now affected. There is a leper asylum in the vicinity of his native town. His history, prior to the development of the present disease, is not significant. His parents are healthy and free from symptoms of his ailment. The tip of the left index finger has been removed as the result of a traumatism. His functions are regularly performed.

Examination.—At the present time, the dorsum of the trunk is seen to be symmetrically, though irregularly, overspread with circular and ovoid patches having a faintly erythematous central area surrounded by annular bands from one to two centimeters in width, pigmented in yellowish-brown shades. There are about a score of these visible, varying in size from the section of a hen's egg to the palm of a hand; some of them are insensitive to both superficial irritation and to cold and heat. There are other areas of anesthesia where the pigmentation and color changes are absent, as, for example, about the popliteal spaces, but more particularly over the posterior aspect of each forearm from the elbow to the ulnar side of the hands as far as the digital borders. The anterior surfaces of the thighs and the left patellar region are equally insensitive. The nerve trunks in both arms are corded and tumid; the great auricular nerve (as explained in the case of the patient previously presented) is distinctly thickened and indurated. There are a few pea-sized nodules, subcutaneous in situation, discernible in the skin of the forehead. Here, however, as in the skin covering the temples, the ears, and the alæ of the nose, the integument is more or less evenly infiltrated. Making allowance for the characteristic color of the skin of the native Maori, the hue is of a deep mahogany shade and glistens as if artificially oiled. The expression of the countenance is characteristically dejected. The reflexes are exaggerated; the mucous membranes apparently are not involved.

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[2] Archiv. für Exp. Path. u. Pharmacologie, vol. 35, p. 306.

* A clinical lecture delivered before the Visiting Alumni of Rush Medical College at the Commencement of 1905.

This leprous patient first applied for treatment at the clinic in February, 1903, and since then at regular intervals has been under our observation. Lepra bacilli were readily recognized in sections of tissue; the diagnosis was thus assured. His disorder is predominantly of the anesthetic type.

Treatment.—His improvement during the first year was pronounced and in a high degree satisfactory. The treatment pursued was largely hygienic and by the administration of tonics. For the last year, however, during which time he has been absent from the city, he has manifestly deteriorated in health. The leonine facies of lepra is becoming pronounced; he suffers from vague pains; is somewhat cachectic and has lost flesh. It is a source of regret that he was not placed at once on the chaulmoogra oil, which we purpose now to administer in the largest tolerated dose, as in the case of the patient last examined.[1]

BLASTOMYCOSIS.

CASE 3.—W. K., a Lithuanian, aged 34, male, laborer, weighing 160 pounds, married but childless, has a fairly good family history. Three brothers and one sister are living, in good health; two sisters are dead of some disease unknown.

History.—He has suffered for one year from a lesion somewhat below the left popliteal space. This lesion is an irregularly oval ulcer, 4½ by 2½ inches in dimensions, with its long axis at right angles to that of the limbs. This is a typical blastomycotic patch, the presence of innumerable blastomycetes having been demonstrated with the microscope. The organisms are now growing in cultures of several generations. As the peculiarities of these lesions have been made the subject of a vast amount of description and illustration, I shall content myself with pointing out the chief peculiarities here visible, merely adding that none of the pictorial representations of the disease as it affects the skin is more classical in its features than the patch now before you.

The surface is beset with irregularly massed verrucous and papilliform projections, uniformly elevated, and no part markedly projected above the general level of elevation. The edge of the patch is formed by a raised ridge, sloping gradually to the surrounding sound skin, the outer surface of this sloping border being thickly beset with exceedingly minute typical abscesses containing, when explored with due precautions, pure cultures of double contoured organisms, each having a central or laterally placed vacuole, and all showing budding outgrowths, the daughter organisms being both smaller than, and in cases as large as, the mother body. In general, the exposed surface is hemorrhagic, bleeds readily on gentle friction, and here and there is slightly crusted from desiccation of the purulent secretion it furnishes, though as the dressings have been removed prior to bringing the patient into the arena, the general aspect of the patch as we now see it is florid.

General Discussion of the Disease.—This disorder has been named the "Chicago disease," for the reason that more cases have been reported in this city than in any other of the world, though the first studies of the malady were made in patients observed by Busche and Buske in Germany and by Gilchrist in Baltimore. The scientific men of Chicago, and of other American cities as well, have diligently but vainly sought the reason for the enormous preponderance of the disease in this city.

One of the most significant and imperative of the questions which have arisen in this connection relates to the fatality which has of late befallen the victims in these Chicago cases, now numbering more than forty in this city alone. The first instance reported by us justified the name originally given to the disease by Gilchrist, of Baltimore, viz., "blastomycetic dermatitis." But the occurrence, under our observation, of cases in which not merely the skin, but also the viscera were involved, cases, in fact, in which the skin was secondarily attacked after organisms plainly had been demonstrated as of earlier origin in the liver, spleen, or kidneys, cases going on to a fatal termination, and in which, *even after a first cutaneous* expression of the malady, there was later systemic infection, revealed the subject in an entirely novel light. They presented for solution a new problem. Were these cases in any way related to those recognized by our colleagues in California and described by them under the titles, "protozoic infection," "coccidioidal infection," etc.? In all the California patients there had been a fatal issue; but the organisms in the human body in these sufferers never formed buds, but invariably reproduced by sporulation. We are now closely watching two subjects of the disease in whom there are symptoms pointing to a speedily fatal issue; one of these cases, for the first time in our experience, occurred in private practice.

The originally highly vaunted treatment of blastomycosis, by the administration of iodid of potassium internally, is without question of value. That this drug possesses an inhibitory influence on the evolution of the organism and at times completely suffices to destroy its activity can not be questioned. A few patients, without doubt, have been thus relieved. In many others, and in those cases resulting fatally, the medication has proved of temporary value only. In some of the fatal cases, intercurrent disorders, tuberculosis more particularly, has been responsible for the issue. The study of these phenomena is as yet in its infancy.

TWO CASES OF ERYTHEMATOUS LUPUS.

CASES 4 AND 5.—Of the two women now presented, one aged 35, is married and has suffered from a facial disease for two years; the other, unmarried, aged 29, has presented symptoms of the same affection for sixteen years.

Development of the Lesions.—In the first instance, the lesions have developed from a single patch on the left temple, which at first was a reddish disc, slightly elevated, scale-covered, and never discharging. Gradually over the bridge of the nose, the scalp, the cheeks, and in a less degree over the upper chest, similar roundish, flattened, scale-covered discs have developed. Those on the scalp have resulted in distinct depressions of the surface without complete loss of hair in the atrophic areas. In the case of the younger woman, similar roundish, scale-covered discs are exhibited over the face and also within the left ear between the tragus and the antitragus. A few smaller but similar discs are visible near the border of the scalp on the forehead. Both patients, treated by my associate, Dr. Quinn, have been greatly improved by radiotherapy and the use of the Pick jelly, which can be highly praised as a local application in the lesions of this character.

Remarks.—These are typical illustrations of erythematous lupus, a disease which has never yet been identified with tuberculosis of the skin, seeing that very rarely have tubercle bacilli been recognized in the tissue. Yet lupus erythematosus is a disease in which, as the French long have taught, curious, and in certain groups of observations, remarkably close relations are sustained by it toward tuberculosis. There are few clinicians of experience who have not seen generalized tuberculosis develop as a sequel of lupus erythematosus; and in other instances the two affections have unmistakably coexisted. In yet others absolutely no proof of tuberculosis of the skin or other organs can be adduced when lupus erythematosus has developed with classical symptoms. The common-sense view of these questions suggests that both in tuberculosis of the skin and in other conditions in which from any cause a diminution has been wrought in the resistance power of the economy, the skin undergoes this singular metamorphosis. Hutchinson and other English writers have laid stress on the fact of the frequency of these lesions in faces that have been much exposed to the weather; indeed, at times in those which have been wholly, or in part, frozen. Certainly it is significant that in most instances of the affection, first, the face, which is pre-eminently exposed to vicissitudes of the weather, is most often involved (cases of generalized erythematous lupus with grave symptoms are exceedingly rare); second, the face is affected rarely in infancy and childhood, but most often when the maturity of the body is nearly attained; in other words, when the face is, in its early experiences, most exposed to out-of-door accidents; third, women in slight preponderance with the delicate skin of the face unprotected by a beard, are somewhat more often disfigured in this way than men.

The old method of attempting to remove these patches by caustic treatment has been generally, though not wholly, abandoned. It has been asserted that radiotherapy, in these instances, is without value, but a great error is involved in such an assertion. Many of the discs wonderfully improve under judicious exposure to the *x*-rays; and in all cases a protective treatment accomplishes more in the way of cosmetic effects than any caustic method hitherto devised.

VERRUCÆ ACUMINATÆ OF THE ANUS.

CASE 6.—This lad, aged 15, has indurated and enlarged inguinal, postcervical, and epitrochlear glands, the relics of a fading syphilitic exanthem over the skin of his body, and gives a history of recent patches in the mouth.

Examination.—Two months ago he noticed a soreness about the anus, and then the lesions now exposed to view were recognized. These increased in size with great rapidity. When carefully inspected, it is seen that a group of venereal warts surrounds the verge of the anus, the entire mass being as large as a butternut, the individual warts being tufted, florid, secreting a thin, offensively smelling mucopus. As usual in similar instances, the warts are pointed, and in appearance resemble the comb of a cock.

I call special attention to the infundibuliform shape of this anus, the orifice of which, instead of being, as should be expected in so young a subject, neatly closed by the aid of the sphincter, is readily made sufficiently patent to admit a large thumb.

Remarks.—To the credit of the class of persons annually frequenting this clinic, it can be stated that this is one of the rarest of observations made in this ampitheater. I can not recall a similar instance in many years. The patency of the anus here is due to unnatural practices with a person of the same sex as the patient. The French, who have had a large experience of similar cases, call attention to this striking feature of the infundibuliform anus; and attention is directed to it here for the purpose of placing on guard every practitioner confronted with a similar case. Chancres of the anus are often, though not invariably, produced in the same way, exception being made in the case of women, in whom, on account of the anatomic features of the anogenital region, such an accident may result from venereal, though not from unnatural, practices.

Verrucous lesions of this sort, whether syphilitic or blennorrhagic in origin, it should be noted, are especially frequent in the very young. The vulva of a nurse girl, 16 years of age, lately examined here, was quite obscured to the view by similar growths. She had been infected on the finger by a syphilitic child for whom she had been caring. Venereal warts of the progenital region in both sexes, are, however, seen also in the third and fourth decade of life, but the larger growths, springing rapidly to full evolution, most often originate in the second decade of life, and in girls more often than in boys.

TWO CASES OF ALOPECIA AREATA.

CASES 7 AND 8.—These two patients, both male, both married, each 30 years of age, exhibit circular areas of baldness on the skin of the scalp, the patches being well defined, free from evidences of inflammation of every sort, and destitute of scales, crusts, or other evidences of disease, save that the scalp in the denuded areas is of an unduly whitened color. The patient on the left has noticed his disease for two months; the other, on the right, has suffered for four months. Each gives a similar history, first of a loss of hair over limited area not larger than a small coin; later there was an enlargement of the affected patch, and the appearance of new spots equally denuded in other regions of the scalp. These are typically evolved instances of alopecia areata, a disease as old as the time of Celsus, whose name was first associated with its lesions.

General Discussion of the Disease.—The valuable researches of Sabouraud respecting the bacterial origin of the malady, the unquestioned occurrence of small epidemics of the affection where the evidences of contagion have been apparently irrefutable, and the general suggestiveness of the appearance of the victim of the disease, have strongly influenced a large number of scientific men to ascribe to it a parasitic origin. The arguments cited on the other side, that, viz., in favor of the neurotic origin of the malady, are numerous and not to be ignored. First, no typical evolution of such patches in sound individuals has resulted from intentional inoculation of pure cultures of the micro-organisms asserted to be the effective cause of the disease. Lesions, it is true, have been thus produced; but these fall short of betraying classical symptoms of alopecia areata. Second, a fact abundantly demonstrated in scores of cases exhibited in this clinic during the last few years, traumatism of the skull (blows, falls, etc.), have repeatedly brought about these losses of hair; and the same may be said of intense nervous strain, domestic grief, and grave exhaustion of the nervous centers. One of our recent patients, a child, was shocked by a scream that brought on temporary unconsciousness, the hair falling typically in due time after; in yet another instance, a boy who had suffered from classical symptoms of alopecia areata suffered from a lightning stroke which left him insensible and, according to the statement of his attendant, "black in the face" for twenty minutes. He had prompt return of the hair after the effective shock of the nervous centers.

In most of the clinical cases seen here, whatever the origin, antiparasitic treatment with scrupulous attention to the hygiene productive of value to the nervous centers, in the most cases, has set aside the chief danger, that, viz., of complete and remediless loss of all the hairy filaments of the body. The larger number of such incoercible cases occurs in private practice, the fact being possibly due, in the well-to-do classes of society, to the greater frequency of the stress and strain of modern life in large cities. The most important point in the forecasting of the future in these subjects concerns the age of the patient. After the thirty-fifth year of life, severe baldness of this type may be remediless.

Locally, we employ brisk stimulation of the bald surface, and, when the areas are not too large, gradual application to each of iodized phenol, creosote, and remedies of that class, always limiting the area attacked at a sitting to a few centimeters. We also employ with advantage the Finsen light, applied over small areas in successive sittings, so as to produce a characteristic reaction, as in the local management of lupus vulgaris. In all cases in which it is not contraindicated, there should be brisk friction of the body surface daily, not neglecting the spine, after cool salt-water sponging; a tonic treatment, both dietetic and medicinal; and relief from nervous strain.

LUPOID SYCOSIS.

CASE 9.—This patient, male, a fish-packer, married, aged 41, without a history of significance in connection with his present disorder, has suffered for nine years from a disease of the region of the beard which during the time named has been at times better and worse. He uses tobacco in moderation, both by smoking and chewing. The disorder first affected the left side of the chin, from which point it gradually extended until at present the entire bearded region is involved. The subjective sensations are those of itching and burning.

Examination.—On close inspection, it is clear that a somewhat active inflammatory process concerns the upper lip and the chin, which are evenly and symmetrically involved in a reddish infiltration dotted with minute pustules, each of which is pierced by a hair shorn in the process of shaving so as to leave for inspection a blackish stump at the apex of each pustule. The redness is due in general to a perifollicular halo about each hair-pouch, the proximity of each to its neighbors producing the general appearance of redness of the involved area.

This is the common picture of sycosis vulgaris, the absence of trichophytosis being demonstrable even without aid of the microscope, by the absence of bald areas in the bearded region, whence hairs have fallen in most well-defined instances of true "barbers' itch;" by the absence of the characteristic "lumpiness" of the affection last named (a feature due to the ing together of follicles invaded by the large-spored ringworm); and also by the general smoothness and symmetry of the lesions invading the chin and lips, a feature rather common in the usual type of sycosis vulgaris, that due to coccogenous invasion of the hair follicles. To this extent the symptoms presented are sufficiently common.

When the cheeks of this patient are examined, the picture presented is wholly different; in fact, the inexpert might be led to suppose that the disease in these parts differs from that which is actively invading the central portions of the bearded face. Here on the cheeks the redness is less distinct, the pustules are few, the tissues otherwise altered. The skin is thrown up into unsightly ridges; and between these, without appearance of arrangement in order, are sunken valleys, these last suggesting to the eye that the skin here is atrophied. The irregularly corded, ridged, and furrowed condition of the cheeks is one which is as characteristic of what is termed lupoid sycosis as are the phenomena recognized in the lips and chin of the ordinary vulgaris type.

Nor is this all. One rarely sees a distinctly developed and obstinate sycosis of lupoid type (Unna's *ulerythema sycosiforme*) without noting that the eyelids, as here, are the seat of a folliculitis, the hairs of the lids, especially of the lower lids, projecting from pouches distinctly involved in the same process as that visible in the actively progressing disease of the bearded region. The eyes are encircled, thus, with pinkish-tinted rims, a feature at first sight suggesting that the patient has granular lids; the symptoms, however, differ *in toto* from those of chronic conjunctivitis. These male patients, red-eyed and red-bearded, with chronic inflammation besetting the periphery of their hair follicles, present a complexus of symptoms that are especially interesting.

General Discussion of the Disease.—Here are some of the questions that arise in this connection:

Why do young male adults with the common symptoms of staphylococcic infection of the skin of the face, usually acute in type and readily relieved by appropriate treatment, not slide into conditions of sycosis in which the microscope only reveals staphylococcic and streptococcic invasion of their follicles? Why do pustular dermatites of the bearded region not invite attacks of sycosis? Why do most patients with the ordinary forms of sycosis vulgaris escape such severe manifestations as those displayed in the case of the patient before us? It is not easy to make scientific responses.

In the case of lupoid sycosis various hypotheses have been framed to explain the conditions present. By some it has been assumed that the disorder is simply a variety of lupus erythematosus affecting the region of the beard. An objection to such an inference is the fact that not rarely this part of the face is actually invaded with the occurrence of patches which then are distinctly characteristic of lupus erythematosus, and not at all similar to those of lupoid sycosis. It has also been claimed that the malady is one *sui generis*. In a few instances coming under our observation we have discovered the presence of tubercle bacilli. I am of opinion that the disease, in some cases at least, is one of the rare manifestations of tuberculosis in the skin.

Treatment.—The therapy of the skin in these cases is one that taxes to the utmost. No means at our disposal compare in value with radiotherapy. We shall treat the active symptoms in this patient with the usual shaving, shampooing, and application of the Wilkinson salve, containing sulphur, tar and green soap, at first in the strength of one part to ten of a simple unguent; later, if productive of good results, with the ointment in full strength. It is always needful in these cases to set aside the results of a catarrh, the secretion from the nasal passages in many cases lighting the disease afresh in the upper lip, whence it spreads. Tobacco usage is always prohibited; cold sponging of the body is regularly practiced; and bichlorid lotions regularly employed before the application of the pastes to the surface; these latter being always kept in contact with the affected face by means of lint spread with the remedy to be applied and bandaged over the part until improvement is demonstrated.

CASES ILLUSTRATIVE OF SYPHILIS.

I show you four patients, each exhibiting a different phase of the evolution of syphilis.

Case 10.—Man, unmarried, aged 28, gives a history of a progenital sore a few weeks ago, the date being indeterminate.

Examination.—He now suffers from mucous patches of the mouth, general adenopathy, and a generalized papular exanthem, covering the entire body surface. The picture is one sufficiently common in all clinical experience. The absence of subjective sensations, the discrete papules of the kind described in the text-books as the "small papular syphiloderm" in groups, their distribution, color, and symmetry taken in connection with the non-cutaneous symptoms make the diagnosis relatively facile.

Appearance of Syphilitic Eruptions.—I call attention to the fact, not sufficiently emphasized, that by the color of an eruption alone, apart from other symptoms presented, it is not safe to distinguish the character of an exanthem. The color of a cutaneous eruption varies from hour to hour with the special condition of the patient; it is not the same in a brunette and a blonde; it is not equally tinted in the face, the lower extremity, and the anal region: it is unlike in the palm of an infant and over the buttocks of an aged man. When one hears it said that as soon as the color is seen the diagnosis became clear, a shadow of suspicion crosses the mind. Syphilis has been described as an "imitator" of other diseases; it would be, perhaps, nearer the truth to declare that many non-systemic affections of the skin resemble those induced by syphilis.

All said and done, however, taken in connection with the character of the lesions exhibited, the browns, the purples, and the deeper reddish hues—the combinations producing what has been described as the "color of raw ham"—are often conspicuously displayed in the skin lesions of lues.

Case 11.—The next patient, a man, aged 45, has suffered from this disease for six years; and his symptoms are widely different from those presented in the younger patient just examined.

Examination.—The left leg is the seat of a circular, well-defined, clean-cut ulcer, with sloughy floor and purulent secretion; while here and there over the lower limbs, deeply pigmented circular patches of gummatous infiltration are displayed chiefly over the left lower extremity.

Remarks.—Between these two patients there is scarcely a point of close resemblance. Only the comparison of observations collected by many men during many years of experience has taught us the varying shades and pictures of the malady in multiform expression, at different periods of its curious career.

Case 12.—A woman, married, aged 28, complains of eruptive symptoms involving the face and hands.

Examination.—Here are symmetrical groups of papules, which do not itch, which have never exuded a serous discharge, and which are chiefly annoying by reason of their unsightliness. They involve the left side of the face near the nose—a common site—and the palms of the hands, the groups rarely exceeding the size of a half-dollar. In places they are covered with a thin, brownish-tinted crust. This patient has been infected, presumably by her husband, some two or three years ago.

Remarks.—It is the practice in this clinic to refrain from asking married women whether they have or have not had syphilis. Their answers to such a question, for the most part, would be valueless. We must know more than they, after inspecting their objective symptoms and securing such tags and ends of a physical history as they can furnish. By far the larger number of them all are innocent of sexual wrong-doing and are the victims of the faithlessness of their husbands, or, what is too often the case, of the infection of the latter prior to marriage.

Case 13.—A woman, aged 35, presents still a different picture.

History.—The patient has been married 18 years, and gives the following history of her pregnancies: First, a living child, now 16 years of age; second, a miscarriage at the fourth month; third, a child, which died three hours after birth; fourth, a miscarriage, the period of pregnancy in which it occurred not stated. She is suffering from severe cephalalgia, with nocturnal aggravation, and exhibits a tibial node, due to gummatous osteoperiostitis productive of intense pain at night and interfering with her sleep.

Remarks.—This last patient illustrates the importance of securing in all suspicious cases a record of the issues of every pregnancy. Such a record not only throws light on the fact of infection, but often also points with definiteness to the approximate date of the accident. In the case of this patient, the first pregnancy resulting in the birth of a healthy child now living suggests that during the first period of her married life both she and her husband were free from this disorder. Then followed a suspicious miscarriage at the fourth month and the sequels of the pregnancies following point to infection occurring between the two first conceptions; that is, twelve years ago. The present condition of the patient can be sufficiently explained by assuming that syphilitic infection occurred at that time. The cephalic pains which she endures are possibly due to an endarteritis obliterans, not sufficient to produce the graver symptoms of nervous syphilis, but capable of engendering the cachexia from which she obviously suffers. They are a menace to her future if they be not relieved, for while the hemiplegias and tabetic phenomena of late syphilis are more common in men than in women it is not to be forgotten that women, though less frequently, do actually endure the same affliction.

General Discussion of This Disease.—Why is it that when the virulence of syphilis is most potent and energetic, that is, in its earlier periods, when its manifestations are commonly most abundant, active, and impressive, the menace to the health, especially in the item of involvement of bone, nervous tissue, and viscera, is less formidable than later in the career of both the disease and its subject? The answer, given by those who yet hold to the old doctrines formulated by Ricord, is practically derived from the schemes of railway travel. The train starts on a time schedule from the point of departure, and only arrives at the more distant stations when a given period of time has elapsed. The objection to such a scheme, though widely accepted in the past, is admitted even by the French writers who were obliged to coin such phrases as "galloping" and "precocious" for those instances of syphilis in which what should be "late" symptoms of the disease develop "early." The truth seems to be that it is when the system is most taxed in the careworn periods of life, when child bearing has pressed its heavy burden on the woman, often otherwise overwrought, when the worry, the care, the burden of poverty, and the stress of life begin to tell on the reserve force of the body, that the toxins of the disease become most dangerous, even though possibly less potent.

Metchnikoff is of the later school of investigators who think that they have discovered the effective germ of syphilis. Schaudinn's *Spirochæta pallida*, recognized in eight cases of syphilis in man and anthropoid apes, never in non-syphilitic subjects, stained both by the Giesma and the Marino method, is believed to be the parasite long sought. Its discovery in experiments conducted in the Pasteur Institute of Paris seems to lend support to the position. We can only at this time repeat with Lerrede: "The great question seems to make progress."

Special Article

IMMUNITY.

CHAPTER XXV.—CHOLERA.

Concluded from page 789.

Prophylaxis.

The rational prophylaxis, which was founded by Koch on a knowledge of the biologic characteristics of the comma bacillus, has proved of great efficiency. The essential points are the following: 1. Immediate bacteriologic examination of the stools in suspicious cases. 2. Absolute isolation of patients, in a hospital whenever possible. 3. Thorough disinfection of the stools, linen, room and all articles with which the patient has been in contact, including water-closets and privies. 4. Continued isolation during convalescence until the stools are free from vibrios. 5. Repeated bacteriologic examination of the stools of those who have been in contact with cholera patients until their freedom from vibrios is assured. 6. Frequent examination of the water supply at different po order to detect the occurrence of water infection. 7. I water infection exists, exclusion of the water from all d es-tic uses, and the institution of means to rid the water of infection. This may be done in the case of infected wells, but in the case of large systems reconstruction may be necessary for future protection. Water for household use should be boiled. Kolle compares the conditions in Germany and Russia during the epidemic of 1892-4. In Germany, where Koch's principles of prophylaxis were rigidly observed, about 10,000 cases occurred, 9,000 of which were confined to Hamburg, whereas in Russia, where precautions were not enforced strictly or generally, 800,000 cases developed during the same period.

Vaccination.

Protective inoculation has shown itself to be of distinct value for prophylaxis against cholera. Ferran, a Spaniard, first practiced vaccination on a large scale in 1884, although little definite knowledge of the value of the procedure resulted from his work. He is supposed to have used impure cultures. Haffkine introduced protective inoculation on a large scale in India, and up to 1895 had inoculated 40,000 persons. Following Pasteur's method with anthrax, he used two vaccines. Vaccine 1 was a culture which had been attenuated by prolonged growth at 39 C. Vaccine 2, which was administered five days later, was a virulent culture. The living organisms were used in both vaccines and the injections were given subcutaneously. The local and general symptoms were mild. Instead of living cultures Kolle has proposed the use of virulent cultures which have been killed by exposure to a temperature of 58 C. for one hour. The vaccine is preserved by the addition of 0.5 per cent. phenol. In the Japanese epidemic of 1902 this method was used on an extensive scale. The incidence of disease among the uninoculated was 13 per cent., among the inoculated 0.06 per cent.; the mortality among the uninoculated was 10 per cent., among the inoculated only 0.02 per cent. The disease, when it occurred in the inoculated, was of a mild type. A single injection of from 2 to 4 mg. of a killed agar growth was given subcutaneously (cited by Kolle). Strong has proposed the use of the products of autolysis of the cholera vibrio as a vaccinating substance, a method founded on the observations of Neisser and Shiga in relation to typhoid, and of Conradi and Drigalski in relation to dysentery. The local and general symptoms are said to be of a mild type. The method has had no practical application.

Natural Immunity.

From what was said above in connection with the so-called cholera carriers, it is evident that not all are equally susceptible to infection with cholera. The conditions on which such cases of individual immunity depend are not known conclusively, although it is often intimated in a general way that a strong bactericidal power of the body fluids, or a high phagocytic power on the part of the leucocytes, is responsible for it. The gastric juice, on account of its acidity, offers a barrier to the passage of living vibrios into the small intestines. It is nevertheless evident that the barrier in many instances is not a serious one. Organisms which are ingested with water may pass rapidly to the intestines without being affected by the acid of the stomach, or when taken with food they may be buried in the latter and hence not come in contact with the gastric secretion. It seems probable that the intestinal epithelium has a certain resistance to invasion which is most manifest in the case of those who do not become infected in spite of the presence of the organisms in their intestines. Natural immunity is said, by Germans, to be one which is directed against the bacteria rather than against the endotoxin. Proliferation of the organisms in the intestinal epithelium is thereby prevented. Poorly nourished individuals, the very young and the very old are particularly susceptible. Other gastrointestinal disorders, in the presence of an epidemic, predispose to infection. Defects in the intestinal epithelium, or a decreased resistance of the latter, may afford conditions which are favorable for invasion.

Active immunity, as that which results from infection or from protective inoculation, is characterized by the appearance

Acquired Immunity.

of bactericidal amboceptors, agglutinins and specific precipitins in the serum. It is now widely believed that acquired immunity depends on the presence of the bactericidal amboceptors in the circulation and body fluids, although Metchnikoff holds, on the other hand, that it depends to a large degree on an increase phagocytic power on the part of the leucocytes. According to Pfeiffer and Marx, the antibodies are produced in the blood-forming organs. An attack of cholera confers immunity of prolonged duration, although it is not always absolute.

Passive immunity is readily induced in animals by the injection of anticholera serum. As in other instances, it is of short duration, however. Doubtless the same condition may be induced in man. Besredka has proposed mixed active and passive immunization by way of protective inoculation, using killed bacteria which have been saturated with the specific amboceptors.

Serum Therapy and Agglutination.

Serum therapy has been no more successful in cholera than in typhoid fever. The antitoxic serum of Roux and others has had no practical trial. According to Achard and Bensaude, the serum of cholera patients, on the third or fourth day of the disease, agglutinates the cholera vibrio. However, they used the serum in dilutions of 1-20, and in this strength even normal human serum may be agglutinating (Pfeiffer and Kolle, cited by Paltauf). Convalescents even after seven months may show an agglutinating power of from 1/100 to 1/120.

The bacteriologic examination of the stools is the most reliable means of early diagnosis (see above).

Clinical Reports

ERYTHEMA MULTIFORME FOLLOWING VACCINATION.

LOUIS M. WARFIELD, M.D.,

ST. LOUIS.

Considering the great number of persons vaccinated, the comparatively few complicating eruptions that occur is not a little surprising. As has been often remarked, many eruptions occurring in the course of a vaccination period are undoubtedly accidental, while others are undoubtedly due to the vaccine virus.

A condition sufficiently interesting to report came under my notice not long ago.

Patient.—Miss J. H., aged 23, a trained nurse, had never been vaccinated previously, and has always enjoyed exceptional health. Her appetite and digestion are good and menstruation regular. She had had the usual mild children's diseases when young, but had never had any eruptions. For about a year she has been very slightly troubled with constipation. Previous to her vaccination she had been in perfect health and had no gastrointestinal disturbance nor any symptoms of even a mild illness.

Vaccination and Result.—She was vaccinated July 29 on the upper left arm. On August 1, before she noticed anything at the site of the vaccinated area more than a slight itching, she saw irregularly shaped bright red spots on the forearm. These spots soon appeared on the lower legs, and shortly both arms from shoulder to wrist, and both legs from thigh to ankle, were thickly covered. These spots soon became firm, nodular and painful. There was no itching or burning. She felt sore all over. There were pains in the knee joints, and wherever the lesions were close to the bones they were very painful to the touch.

Examination.—August 4. She is a well-developed, well-nourished woman. The mucous membranes were a good color, tongue somewhat coated, pulse slightly accelerated, temperature 100 F. Over the extensor surfaces of the arms and legs there was an eruption consisting of rose-red irregularly-sized and shaped spots, level with the surface of the skin, bright red, somewhat infiltrated areas, varying in size from that of dimes to five cent pieces, and firm, deeply seated nodules, perceptibly raised above the surface of the skin. There were no vesicles, nor was there umbilication of the nodules. The nodules situated over bony prominences were quite firm and exquisitely painful to the touch. Some were of a typical violaceous hue and appeared shiny. There was no definite line of demarkation seen between the lesions and the surrounding skin.

Subsequent History.—New crops came out, following the order of ripening described from day to day, until August 8. In the meantime, the older lesions grew softer, less painful and more purplish in color. On August 8 vesicles appeared at the site of the vaccination. These ran a normal course. On August 10, three small vesicles appeared on the right forearm; by the next day these had disappeared, leaving small red spots with slightly umbilicated centers. By August 14 the rash had entirely disappeared and only a few brownish stains were visible. During the period of the eruption there was slight fever but not more than could be attributed to the effects of the vaccine itself. The only inconvenience was the general soreness, especially in the knees and elbows.

Remarks.—That this was a typical case of erythema multiforme is certain. The whole course of the eruption was short, but the lesions and their appearance in crops were typical. Most curious were the great tenderness of the nodules and the feeling of soreness over the arms and legs, especially around the knee and elbow joints. There were no lesions on the backs of the hands or dorsal parts of the feet. As usual with erythema multiforme, the eruption showed itself before the vesiculation of the vaccinated area.

LAPAROTOMY UNDER LOCAL ANESTHESIA ON A PATIENT, AGED SEVENTY-TWO.

R. L. IGEL, M.D.

LEAVENWORTH, KAN.

I wish to report a very interesting case that came under my care July 31, 1905.

Patient.—A woman, aged 72, was suffering from an ovarian cyst of seven years' standing, which had grown to such an extent as to fill the whole abdominal cavity.

Examination.—I found her in terrible pain, resembling that of obstruction of the bowels. An enema was given, with no results, and I knew that cathartics would only increase the trouble. I therefore determined to relieve the bowel that I was sure was being obstructed from the pressure of the cyst by tapping the tumor.

Operation.—She was taken to the hospital, a few blocks from her home and was prepared for operation. Chloroform and ether were contraindicated by her age and exhausted condition, so I began by injecting a small amount of a 4 per cent. solution of cocain three inches below the umbilicus, in the median line, just under the skin, and followed with my knife, making a clean incision. The adipose tissue was then gone through and separated until the peritoneum was reached, and this tissue was cocainized in like manner in front of the knife. This incision brought the cyst into plain view. I then tapped it with a small needle, to allow shrinkage enough to grasp the walls with forceps, after which a trocar was inserted and the liquid, which measured four gallons, was allowed to run off slowly. I made a complete exploration of the abdomen and of the adhesions and withdrew as much as possible of the cyst from the walls of the abdomen, so as not to allow of any infection, washed the sac out with normal salt solution, replaced it and allowed one-half pint of the solution to remain. I also filled the abdomen with normal salt solution and did as thoroughly aseptic an operation as possible. The peritoneum was closed with four stitches and the abdominal wall with two stitches. The patient talked to me in the meantime and turned herself on one side to help me drain the cyst. Her pulse and heart were constantly watched and she was allowed to take continuous sips of cool water.

Result.—She was removed from the table to a ward. She did not complain during the operation, nor since. The bowels moved freely of themselves. That night she took two cups of tea and slept the whole night, and has been doing well ever since. She experienced no shock whatever.

Remarks.—I did not allow any stimulants, such as strychnin or brandy, to be used. Morphia gr. 1/4, atropin gr. 1/150 was given at the start. I entered the abdominal cavity with the intention of giving my patient every possible chance, as I did not wish to infect the abdomen with a probable infectious tumor and, therefore, to endanger her life. As a general anesthetic was contraindicated it was necessary to use local anesthesia, but, in all, probably not more than 40 minims of a 4 per cent. solution of cocain was used.

The case appeals to me, for the case in which the abdomen was entered, the absence of bad after-effect and of shock, the entire absence of any discomfort from the operation, and the wonderful manner in which the patient is continuing to recover.

A FATAL CASE OF TETANUS OCCURRING WITHIN SEVENTY-TWO HOURS OF INJURY.

J. B. TYRRELL, M.D., Sc.M.
WATERVILLE, MINN.

Patient.—W. D. G., boy, aged 10.

History.—On Tuesday, Aug. 15, 1905, at about 6 p. m., the boy fell from a stageing to the ground, a distance of about 8 or 10 feet, and sustained a compound fracture transversely through the lower epiphysis of the tibia, the bone ripping the soft parts and stocking for a distance of 4 inches above the site of the fracture and sticking to the ground.

Treatment.—He was picked up and carried to his home, where the wound was cleansed thoroughly, care being taken to leave no foreign particles in it; hydrogen peroxid was used finally. The bone was replaced and the leg put in a temporary splint dressing. The subsequent treatment consisted of irrigation of the open wound and the liberal use of hydrogen peroxid.

Subsequent History.—On Saturday, August 19, his father, who is a physician, told me the boy had had during the previous night what appeared to him as premonitory twitchings, and on that day, Saturday, there was slight rigidity of the muscles of the neck and inability to open the mouth wide. Antitetanic serum was ordered for him. Intraneural and intraspinal injections were advised, but were refused. The serum was given subcutaneously, and the paroxysms were controlled by hypodermics of morphin every few hours. His symptoms progressed rapidly, and death occurred at 2 p. m. Aug. 23, 1905.

Remarks.—There is a question in my mind as to the time of inoculation in this case. Was he infected at the time of this injury or at an earlier period? About a week or ten days previous to this injury, according to the boy's mother, he stepped on a rusty nail, running it into his foot. The boy did *not* let his father know of this, and had his mother dress the wound, which healed promptly. He received this wound in practically the same locality in which the leg was fractured—not over 50 feet away. Was he infected with the tetanus bacillus at this time? I think it is possible, but I believe it is not probable in this case.

New Instrument

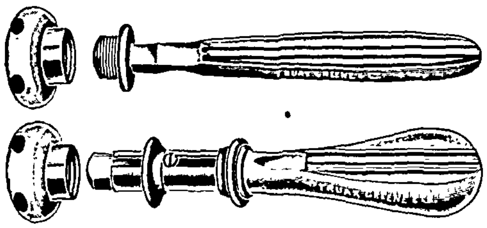
MURPHY BUTTON OBTURATOR AND APPLICATOR.

A. H. CORDIER, M.D.,
KANSAS CITY, MO.

Having used the Murphy button for many years and having met some difficulties in its application or introduction I have devised an instrument that in a great measure overcomes all the obstacles thus far met. The method usually employed heretofore to introduce the button has been to seize the rim of either half of the button with a pair of hemostats, thus forming a handle to facilitate the introduction.

On several occasions, not only in my own work but in the work of other surgeons, the grasp of the forceps has injured the thread of the button or has dented the circumference of one-half the button so that when the two halves have been applied and were ready to be shoved together they would not fit thus necessitating the removal of the second half of the button and the introduction of a new button in the place of the one injured by the forceps. One blade of the forceps must of necessity clasp the outer side of the stem of the button so that the purse string suture is tied over the end of the forceps, thus interfering with the proper adjustment of this suture, so that when the forceps were removed the button would drop into the intestine.

Again, while the button is being introduced the gases and other contents of the intestine are escaping thus increasing the dangers of an infection in the field of the operation. Frequently in tying the purse string around the stem of the button the mucous membrane would be crowded beyond the end of the stem so that when the approximation of the two halves was attempted this mucous membrane was found to be in the way. The forceps do not give a sufficiently firm handle to force the button into the viscera, and to overcome the objections met with in the application of the button, I have devised an instrument to be called the Murphy button obturator and applicator. This instrument is very simple in its use and facilitates very materially the introduction of the button. It requires three sets for the three sizes of the Murphy button. The obturator that is used in the female half of the button is simply a handle with the flange projecting where it comes in contact with the end of the stem, the portion projecting into the button is threaded to screw into the stem of the button, thus the opening in the button is effectually closed during its introduction; there is a good firm handle to hold to and the projection rim prevents the puckering string from crowding mucous membrane beyond the stem of the button.



The obturator that is used in the other half of the button is composed of a hollow canula with a movable center piece. This piece at the end that is introduced in the button is wedged shape so that when the projecting portion of the canula is introduced into the half of the button and the movable piece is pulled on it spreads the slit end of the canula thus holding the button firmly. After the two halves have been introduced and are ready to be pushed together all that is necessary is to unscrew the obturator in the female part of the button and to press on the handle of the movable piece in the canula, instantly releasing the hold on the male half of the button.

The application of this instrument is far more simple than this description would seemingly imply. A reference to the accompanying illustration will give the reader a better idea of the obturator and applicator than the description.

Overlying an Infant Punished as Manslaughter in England.—Thousands of cases of death from overlying take place in Great Britain during a year. In certain cases coroners have often wished to obtain a verdict of manslaughter against the mother, but public opinion is opposed to such a course. Even in cases in which the coroner's jury has brought in this verdict it is usually set aside by the grand jury finding "no true bill." A case has at last occurred, however, in which the mother has been punished. At the *Chester assizes* Judge Phillmore sentenced a woman aged 31 years to twenty-one months' imprisonment with hard labor. Eleven days after confinement she took her child to bed with her while in a drunken state. She slept heavily and overlay and suffocated the infant. The jury found her guilty of manslaughter by an act of gross and culpable neglect.

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THE TECHNIC OF PERCUSSION.

One of the first things taught to students of medicine in the clinical course is the art of percussion. Along with inspection, palpation and auscultation, percussion is a fundamental method of examination. Unfortunately, it is too often improperly taught, and even when the teaching is good it is surprising to find how few students perfect themselves in its application. Since the advent of laboratory methods, too, it is to be feared that less attention is paid to physical methods than is their due. Microscopic examinations of sputum and blood are extremely helpful, but the physician who relies on such methods alone and who does not practice assiduously the time-honored physical methods will make but a sorry mess of his work.

It matters but little which method of indirect percussion one uses—finger on finger, finger on plessimeter, or hammer on plessimeter; the important matter is to learn thoroughly one of the methods or all of them, so as to obtain trustworthy results. The percussion by finger on finger, however, has many advantages. In the first place, one has his armamentarium always with him, while hammer and plessimeter are constantly being left behind, lost, or broken. In the second place, the sound yielded by the finger itself is less disturbing than that of the plessimeter. In the third place, the sensations of touch and resistance felt by the finger percussed are often as important as the percussion sound, and they are missed when hammer and plessimeter are used. Finally, one can control the pressure of the finger against the surface to be percussed more easily than that of the plessimeter, and this is of as great importance in eliciting distinctions of percussion-sound as is the force of the blow of the percussing finger itself. It is easier at first, it is true, to secure fairly satisfactory results with hammer and plessimeter. Percussion by finger on finger is undoubtedly harder to learn, but once skill is acquired the method for most purposes is superior to all others.

Like every art, percussion can be perfectly learned only by long experience. There are, however, a number of small details of technic which, if observed, help greatly in the acquisition of the art. The error made by all students at the beginning (and it is to be feared by many teachers in the so-called percussion courses) is an attempt to produce loud sounds, sounds that convince the neighborhood. Nothing could be more disastrous to success. Even when it is desired to elicit the so-called "deep dullness" in contradistinction to "superficial dullness," a very slight blow is required, only a little stronger than the delicate stroke needed to demonstrate the latter. The clinician who percusses so that an audience in an amphitheater hears the sound undoubtedly makes a noise, but nothing accurate in the way of percussion limits can be so demonstrated. When the superficial dullness of the heart, for example, is to be outlined on the thoracic wall, the lightest possible percussion should be used. The moment one percusses strongly the vibration is propagated beyond the local limits and a mixed sound is produced. Indeed, the skilled diagnostician in localizing superficial limits on the thorax percusses so lightly that over an area of superficial dullness practically no sound is heard; then the moment he moves from the solid organ to an air-containing one the same percussion stroke produces a distinct resonance. In no other way, to cite another example, can the so-called "lung-liver limit" be accurately localized. With the light percussion described—so-called "superficial percussion"—the areas of solid organs on the thoracic wall can be demonstrated with ease, and small pleuritic effusions, pneumonic patches, or pulmonary infarcts which on ordinary rough-and-ready percussion would be entirely overlooked are readily localized. The accurate determination of the deeper dullness, for example, the deep cardiac dullness (so-called relative dullness) is far more difficult than the determination of superficial dullnesses; but here too the rule is to use the lightest percussion stroke that will elicit the distinctions which exist. In determining superficial dullness, the plessimeter finger should be applied as lightly and evenly as possible, without pressure, to the surface to be percussed; in eliciting deeper dullness the plessimeter finger may be more firmly applied.

In this indirect percussion only one finger of each body surface, a point of great importance in the production hand for making the blow, the index, or preferably, the middle finger of the left hand for receiving it (plessimeter finger). The plessimeter finger, with volar surface applied to the part to be percussed, must be everywhere in close contact with the surface and should be placed parallel to the boundary line which one desires to determine. The percussing finger (its nail closely pared) is flexed and the blow so given that the axis of the terminal phalanx, when the pulp of the finger strikes the plessimeter finger, is perpendicular to the body surface, a point of great importance in the production of the right sounds. The hand and fingers should be held loosely, anything like an awkward, tense or cramped attitude being avoided. The blow is made solely by flexion of the wrist, the forearm remaining stationary; it should be light, as has been said, short and elastic.

If medical students could be carefully supervised until they have acquired the technic of percussion and have learned to have real confidence in the results obtainable by it, instead of being compelled, as they often are, to carry into their practice that distrust which is engendered by false methods and insufficient training, the art would be far more highly valued and more widely practiced than it is even to-day. Fortunately, exact training in the method of percussion is now being insisted on in our best medical schools; moreover, those of us who failed to get it may easily acquire a good method if we patiently set about it with the aid of one of the many good text-books now available.

REGIONAL DISEASES AND THE SESSIONS OF THE AMERICAN MEDICAL ASSOCIATION.

When medical associations were first formed in this country one of their principal avowed objects was the gathering of data in order to enable physicians to understand the various diseases which occurred in different parts of the country. At that time, over a century ago now, meteorologic conditions were considered to influence disease types, much more than is now known to be the case. In spite of this, however, there is a very interesting variation in disease in different parts of the country, and the annual sessions of the American Medical Association—held each year in a different section—serve to call special attention to this. When the Association met at New Orleans two years ago, special attention was given to the intestinal parasitic diseases of the southern states, and great light was thrown on the practical side of the diagnosis and treatment of these affections.

The recent session in Portland, Oregon, has enabled us to add to our knowledge of types of disease which exist on our western coast. It was interesting to find that practitioners along the Pacific coast are universally agreed that the various forms of vascular degeneration are more common in the far western states than in other parts of the country or in Europe. From San Francisco, particularly, it was reported that precocious arteriosclerosis is a rather common affection. This is true not only as regards the ordinary thickening of arteries, but also of the occurrence of the advanced stages of arterial degeneration as represented by aneurismal dilatation of various arteries. Aortic aneurisms are particularly common, considering their rarity ordinarily, and are found to affect not only the arch of the aorta, but also the abdominal aorta. There is no doubt about the diagnosis of these cases, for quite apart from the fact that the diagnosis was made by careful, conservative clinical observers it was confirmed in most cases by means of the x-rays, and under ordinary circumstances this leaves very little room for doubt in these conditions. A report of undue frequency of premature arterial degeneration on the Pacific coast would have caused little surprise had it been made thirty years ago. At that time the pioneers of the early days in San Francisco, the forty-niners and men of the early fifties, were still alive. These men presented in their life histories most of the etiologic conditions which are usually considered to bring about arterial degeneration. Most of them had been very hard workers and had gone through serious privations in the pioneer days. Nearly all, under the trying circumstances of their lives, had used alcohol to excess, and not infrequently with an irregularity of food consumption and a lack of nutritious material likely to make alcohol even more serious in its effects than usual. Not a few of them indulged in other vices and suffered the usual effects which were much more liable to occur under the low moral conditions of the early days.

In addition to the above diseases, many affections of the thyroid gland are reported[1] as existing quite commonly, not only along the southern Pacific coast in California, but also in the Pacific northwest. It is reported that a certain number of animals with enlarged thyroids have been observed in Oregon and in the southern part of Washington. Ordinary exophthalmic goiter occurs apparently with more frequency in and around San Francisco than in the large cities in other parts of the country. It would seem not unlikely that if these two conditions of arterial degeneration and thyroidism really exist they may possibly be connected with one another. The over-action of the heart so common in exophthalmic goiter may very well be the cause of the arterial degeneration seen in other cases. It is possible that while other symptoms are only slightly manifest the effect on the heart may be very marked and this in turn may cause the over function of the arteries which ultimately leads to sclerotic conditions. It is to be hoped that the attention which has been directed to the diseases of the Pacific coast may result in new light being thrown on the etiology of these important conditions.

THE EFFECT OF TOBACCO IN HEALTH AND DISEASE.

Next to alcohol, there is probably no substance used by man which has been so villified and condemned as tobacco. Certain intemperate temperance advocates from time to time have attempted to pass laws prohibiting the use of certain forms of the weed in various states, and in some instances anticigarette ordinances have been placed on the statute books. Probably the smokers in such states believe themselves much persecuted, when, as a matter of fact, there were at one time European countries in which smoking was illegal, and in Turkey the offence was, for a short period, punishable by death.

The attitude of certain in authority regarding the practice of smoking during the early days of the habit is shown by the words of James I. of England, expressed in his celebrated "Counterblaste to Tobacco." He describes smoking as "a custom loathsome to the eye, hateful to the nose, harmful to the brain, dangerous to the lungs, and in the stinking black fumes thereof nearest resembling the horrible Stygian smoke of the pit that is bottomless." It can not be denied that in modern times large numbers of medical men have been addicted to the use of tobacco, perhaps a larger percentage than of men in general. The consumption of this substance in its various forms reaches an enormous figure each year, and one is tempted to ask, If it is so harmful, why do not physicians see more of its ill effects? As a matter of fact, there is singularly little literature of a convincing nature bearing on its evil effects, if we except one or two conditions like the tobacco heart and tobacco amblyopia.

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[1] Herbert C. Moffitt: "Affections of the Thyroid in California," The Journal A. M. A., this issue, p. 837.

A perusal of a series of papers concerning the effect of tobacco in health and disease, contributed by a number of eminent English authorities,[1] leaves one with the feeling that there is still much to learn regarding this substance. The evidence brought forward as to its action on the various organs seems to bring out sharply a few facts, the most important of which is that tobacco is undoubtedly injurious during childhood and youth. The evidence that it is to any great degree injurious to the mature adult is much less strong. There is, on the other hand, much evidence to indicate the stimulating and sedative effect of smoking in moderation. Lauder Brunton, who deals with the action of tobacco on the circulation, cites cardiac irregularity as the common symptom of excess, and pseudoangina as the rare one. The contributor on the effects on the gastrointestinal tract, Dr. Norman Dalton, is able to find but one or two cases in the literature in which a convincing relation between tobacco and stomach trouble exists. It is admitted that we know but little about the effect of tobacco on the intestines, though there is clinical experience, opposed to experimental data, that it favors peristalsis. The effects of tobacco in excess on the nervous system are tremor, giddiness, vasomotor disturbances, such as cold hands and feet, and intranocturnal insomnia.

The effects on the mouth and tongue may be said to be, in the main, minor, though the predisposition to epithelioma of this region must not be overlooked. The effect on the upper air passages is to produce in some cases a pharyngitis and to exaggerate already existing pathologic conditions, such as sinus disease. The general impression gathered from these papers is that in the adult tobacco must be used to excess to produce serious consequences; that even under such conditions severe lesions are rare; that cigarettes are the worst form in which to use the substance, and that the poisonous effects of tobacco are greatly increased by the simultaneous use of alcohol. The question simmers down, then, to the old one of moderation, except in the case of individuals with an idiosyncrasy to the weed. Just what is moderation must, of course, be decided in each individual case by actual experiment. One man can consume with impunity a number of cigars or cigarettes which would seriously poison another. The whole subject is one which needs further investigation, and which will be most difficult to elucidate, at any rate clinically, on account of the frequency of complicating conditions, such as the simultaneous use of alcohol. In view of the scantiness of the literature on certain phases of the subject, it is to be hoped that the profession will be on the lookout for cases of this character and will record them.

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[1] The Practitioner, vol. lxxv, No. 1.

THE OXIDIZING FERMENTS OR OXYDASES.

In a recent issue we called attention to the catalytic nature of the intracellular ferments and referred more particularly to the work which has been done on the enzymes which accelerate proteolysis and autolysis. Just as interesting are the researches of ferment chemists concerning the influence of enzymes on the processes of oxidation which go on in living organisms. Since Lavoisier's time it has been known that the animal body possesses oxidizing properties; later studies went far toward localizing the oxidation processes in the cells (Hoppe-Seyler, Pflüger, Schmiedeberg); still later it was proved that the cells need not be intact to cause the oxidation, crushed cells and cell extracts being shown to be effective; finally, it has been demonstrated that the oxidizing processes in the cells are dependent on the presence in them of specific catalytic agents—the oxidizing enzymes or oxydases (Bertrand, Schoenbein, Jacquet, Schmiedeberg, Jacoby). A whole series of oxydases is now recognized, but we shall refer only to six better known examples.

First of all there is the ferment which oxidizes hydrogen peroxid to water and free oxygen gas. It is a matter of every-day experience that oxygen gas is liberated when hydrogen peroxid solutions are brought into contact with blood, pus or tissue cells. The proof has been definitely brought that this oxidation is due to a special enzyme, which is destroyed at a temperature of 100° C., and whose action is inhibited by poisons like hydrocyanic acid. This ferment is widely distributed in the body, the scale of activity, according to Spitzer,[1] decreasing in the series—blood, spleen, liver, pancreas, thymus, brain, muscles, ovary, Fallopian tube. A second oxidizing ferment is that in animal and plant cells which turns the guaiaconic acid of gum guaiacum blue. It also is inhibited in its action by hydrocyanic acid (Schoenbein).

Closely allied to the above is the third very important oxidizing ferment, the so-called laccase of Bertrand.[2] It was shown by Yoshida that this enzyme is responsible for the formation of that valuable commercial product, black Japanese lacquer. Bertrand has made a thorough chemical examination of laccase. He obtained it in preparations free from albumin and demonstrated in it the presence of manganese, along with non-nitrogenous organic substances. This finding is of great importance, for it suggests the possibility that the nature of ferments is to be sought in combinations—probably colloidal—of organic substances with metal ions.

Remarkable in its oxidizing effects is a fourth enzyme, the so-called tyrosinase, discovered by Bertrand.

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[1] Pflüger's Arch., vol. lxxvii, 1897.

[2] Compt. rend. de l'acad., 1895-1897.

He found it in plants and showed that under its influence the white amino-acid tyrosin is converted into colored compounds. One sample of tyrosinase obtained by Gonnermann[3] is capable of changing tyrosin into homogentisinic acid, a fact which turns the clinician's mind at once toward a possible explanation of the pathogenesis of alkaptonuria in human beings, especially as tyrosinase has already been demonstrated in the tissues of certain animals by Biedermann and by v. Fürth and Schneider. It appears probable that the melanin of the cuttlefish is formed through the oxidizing influence of a tyrosinase.

A fifth oxidizing ferment present in the pancreas, salivary glands, spleen, bone marrow and thymus, but not in the lymph glands, breasts, muscles, lungs, brain, adrenals, testicles or kidneys, is that shown by Rochman and Spitzer[4] to influence the synthetic origin of indophenol in the body. They call it indophenol-oxydase.

Perhaps the most important, at any rate the best studied, of the oxydases thus far discovered in living tissues is the aldehydase of Jaquet,[5] isolated first in Schmiedeberg's laboratory. It is very widely distributed in the animal body, occurring in the liver, spleen, salivary glands and thyroid, though it has not yet been demonstrated in the pancreas, muscles, breast or bone marrow, from which organs it appears to be absent. An interesting fact brought out by Jacoby is that, while abundant in the cortex of the suprarenal body, it is absent from the medulla of that organ, just the opposite of adrenalin, which occurs in the medulla but not in the cortex. This aldehydase has the power of oxidizing aldehydes of both the aromatic and fatty series to their corresponding acids. Thus salicylic aldehyd is oxidized by it to salicylic acid and formaldehyd to formic acid. It has been found possible to isolate this ferment comparatively easily, the method of precipitation by uranyl acetate worked out by Jacoby[6] being especially successful for the purpose. It is a true "contact substance" in the chemical sense, as the ferment is not used up during the single reactions, but only very gradually becomes inactive. The laws to which its activities are subordinate have been carefully studied by Medwedew.[7] In certain pathologic conditions the relations of aldehydase have been examined; thus it is not absent from the liver in phosphorus poisoning nor in diabetes mellitus (Jacoby), though it appears to be lessened in amount in the livers of children dead of gastroenteritis (Pfaundler[8]).

The multiplicity of oxydases is an interesting feature. There is no general oxydase, but specific oxydases are active for the individual oxidizing reactions. On the one hand, a given organ may contain one oxydase and not another, and on the other different oxydases may be isolated from one and the same organ. The comparative table of Rosell,[9] showing the distribution of various oxidizing ferments, is of interest in this connection.

As we pointed out in a previous article, the exact chemical nature of the ferments is as yet unknown. The chemistry of the constitution of oxydases is almost as obscure as is that of other enzymes. It seems clear, however, that they are not albumin bodies or nucleoproteids, and there is a good deal of evidence that they represent organically bound metals, most probably iron and manganese.

THE YELLOW FEVER.

The situation has not changed materially during the week. In New Orleans the improvement has been so well maintained that there is a menacing relaxation of public efforts at mosquito destruction. At two points in Louisiana—Tallulah and Patterson—the conditions are grave, a large proportion of the population ill, no funds to work with, and the populace hostile to the mosquito doctrine. The state has offered a small sum if the citizens do their part, and Dr. Charles L. Chassaignac, New Orleans, has left his practice and volunteered to take charge at Tallulah in the hope of arousing the community to help itself, and with a view to proper care of the sick. Reference to our news columns will show that the conversion of Governor Vardaman of Mississippi to rational methods is complete, thorough and creditable. No doubt this excellent result is due to the personality and enlightened persistence of Dr. John F. Hunter, Jackson, secretary of the State Board of Health, and of the officers of the U. S. P. H. and M.-H. Service, with whom Mr. Vardaman has been recently thrown in contact. Mississippi has a number of infected points, the governor and communities admit the failure of shotgun quarantine, and scientific methods under the supervision of the U. S. P. H. and M.-H Service are being vigorously applied. The muddle in Arkansas is astonishing, but it is too early to arrive at final conclusions as to the merits of the controversy. Members of the old State Board of Health appear to have resigned as a matter of principle and as a protest against irrational and overriding methods of Governor Jefferson Davis, and if this prove to be the case, physicians will regret that the governor was able to find other medical men to take the places vacated under such circumstances. Judgment must, however, be suspended until further facts come to light. It looks as if Florida might have a considerable epidemic from the Pensacola focus. Everywhere in the infected area the facts are fully confirming the mosquito conveyance. For instance, Tallulah, La., early in the epidemic had a few cases which ran their course without others appearing and for two weeks or more no further cases occurred, so that it was hoped the infection had run out. However, from lack of funds and from popular disbelief in the part played by the stegomyia, no serious effort was made to destroy the mosquitoes and now the community is more generally infected and is in more grave condition than any other yet involved, the infection not coming from outside but from the infected mosquitoes allowed to thrive after the first cases occurred.

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[3] Pflüger's Arch., vol. lxxxii, 1900.
[4] Chem. Berichte, 1895.
[5] Arch. f. exper. Pathol. u. Pharmak., vol. xxix, 1892.
[6] Ztschr. f. physiol. Chem., 1900.
[7] Pflüger's Arch., vol. lxxxi, 1900.
[8] Jahrb. f. Kinderheilk, 1901.
[9] Dissertation, Strassburg, 1901.

"PICTURES THAT TELL THEIR OWN STORIES."

Under the above caption, the *Ladies' Home Journal* for September devotes a page to pictures that tell their own stories most effectively. One of the pictures is a reproduction of a testimonial from a congressman, in which he tells how satisfactory he found peruna for grippe and catarrh; parallel with this picture is a reproduction of a letter from the same congressman, in which he states that the letter referred to is a forgery and that neither he nor his family ever used the nostrum. Another is a photograph of an advertisement showing how the names obtained by patent medicine concerns—often under the promise to keep them confidential—are sold or rented. A photograph of a label taken from a bottle of Mrs. Winslow's soothing syrup, bought in England, shows that there they have to acknowledge that it contains morphin; for on the label is the legend: "This preparation, containing, among other valuable ingredients, a small amount of morphin, is in accordance with the pharmacy act hereby labeled POISON." The most "telling" picture in the group is one that contains a reproduction of an advertisement which tells us about Mrs. Pinkham: "Having had considerable experience in treating female ills . . . it was easy for her ailing sisters to pour into her ears every detail of their suffering. . . . Any woman, therefore, is responsible for her own suffering who will not take the trouble to write to Mrs. Pinkham for advice." Parallel with this is a photograph of the tombstone in Pine Grove Cemetery, Lynn, Mass., which bears this inscription: "Lydia E. Pinkham, born Feb. 9, 1819, died May 17, 1883."

THE CHOLERA.

From the press dispatches we learn that Asiatic cholera has again invaded Western Europe from Russia, where it has probably been more or less epidemic for some time, notwithstanding the alleged statement of an official commission that no case has occurred in the Russian empire since April 21. The cases thus far reported are confined to certain districts of Prussia, one or two exceptional cases occurring in Hamburg. While it is not anticipated that there will be any repetition of the epidemic of thirteen years ago, the sanitary authorities are wide awake to a certain degree of peril in the situation, and even in this country steps have been taken by the Public Health and Marine-Hospital Service to prevent any possible importations of the disease. The sanitary conditions in Russia are never entirely satisfactory, and it was pointed out some time since that, owing to the internal disturbances and to the fact that the war is draining the country of physicians, the dangers of a cholera epidemic are imminent. With an ignorant populace, a certain degree of weakening of authority and a general lack of intelligent medical supervision in many extensive districts, the fact of cholera leaking over the borders is not at all an encouraging one. It will be very surprising indeed if Russia does not suffer severely from this cause, and it will require active measures on the part of her neighbors to prevent an extension of her misfortunes beyond her boundaries. The extensive immigration of Russians into this country, which does not seem likely to be soon checked, will call for vigilance on the part of health officers at seaports where the immigrants land, and it is reported that several Russian immigrants have been rejected because they came from cholera-infested districts. It is fortunate, however, that, with our better knowledge, cholera is not likely to become the formidable scourge of previous years, but it would not require a very extensive neglect of necessary precautions to make it even now a serious matter.

FEE BILLS LEGAL.

Down in Texas, not long since, some trustophobiac thought he saw in a fee bill of a local medical society a violation of the antitrust laws of the state, and promptly submitted the matter to the attorney general. That official took the matter seriously enough to give a written opinion, which probably settled the matter, in the mind of his inquirer, as far as Texas is concerned. According to the opinion of the attorney general, it is not a restriction of the free pursuit of business for any person or set of persons to refuse to sell their professional services for less than the value they themselves place on them. This would seem to be sufficiently self-evident, but perhaps it is just as well to have a legal opinion on the matter. Since we hear so much of "medical trusts" whenever physicians unite for scientific purposes to protect themselves from imposition or to secure their rights, a little surplusage of legal utterance of common sense will do no harm.

THE PROGRESS OF PURE FOOD LAWS.

The pure food issue stirs both commerce and politics. The developments of the next six months promise extreme interest. There has recently been organized the "National Fruit Manufacturers' Association," with from 50 to 75 members. Its announced object is to protect the public from adulterated foods and drugs. Among other remarks, the secretary of the new association said: "There will be a pure food law enacted at the next congress; of that there is no doubt. What we must decide is, shall it be a pure food law of the manufacturers or of the food commissioners?" At Portland, the National Association of State Food and Dairy Departments decided that the United States Department of Agriculture has set up impracticable standards and that each state should have its own standards and methods, just what the adulterators hope for. It is a question in the minds of many as to whether around state insurance commissionerships or food commissionerships center the most scandals and greatest graft. Of course honest men do get into these positions, but not always. Only two years ago, one food commissioner withdrew from the association on the ground that it was being used for the personal profit —graft—of its members. Reverting now to the remark of the secretary of the Food Manufacturers' Association, it is clear that the medical profession and the public want neither "a pure food law of the manufacturers" nor "of the food commissioners." Congress is going to pass a pure food law, and we shall be compelled to put in sleepless nights to be sure that the measure is not passed in emasculated and deformed shape.

Medical News

ARKANSAS.

Physician's Name Dropped.—The name of Dr. Oscar S. Burrow, Hot Springs, has been dropped from the registered list by order of the Secretary of the Interior.

Appeal to Annul Rule.—The attorney for the unregistered physicians of Hot Springs has made a direct appeal to the President asking him to direct Secretary Hitchcock to recall all rules relating to the creation of a Federal Medical Board, and to prescribe the qualifications a physician must pass to be at liberty to use hot baths in the care of his patients. The petition was referred by the President to the attorney general.

State Board of Health Changes.—Drs. George M. D. Cantrell, president of the State Board of Health, Robert H. Christian, secretary, William H. Miller and William B. Hughes, all of Little Rock, have resigned from the State Board of Health on account of friction between the board and the governor of the state regarding the quarantine situation. Dr. Joseph P. Runyan has been appointed president, Dr. Joseph P. Shephard, secretary, both of Little Rock, and Drs. Robert A. Hilton, Eldorado, and Eugene H. Abington, Beebe, have been appointed to succeed the retiring members.

Personal.—Dr. Thomas B. Bobbitt has been made chairman of the Beebe Board of Health.——Dr. Henry Owen, Newport. has been elected president of the Jackson County Board of Health.——Dr. James M. Gist, Beebe, has been seriously ill with heart disease.——Dr. William H. Barry, president of the Federal Medical Board, Hot Springs, is critically ill with intermittent fever at his home.——The Ashley County Board of Health has been organized with Dr. William E. Easter. president, and Dr. William S. Norman, secretary, both of Hamburg.——Drs. J. Pell Baker, Morrell, Henry E. Cockerham, Portland, and J. L. Parker, Snyder, were appointed vice-presidents for their respective districts.——Crawford County Board of Health has been organized with Dr. William L. Parchman, Van Buren. president, and Dr. Sharp, Alma. secretary.——Drs. S. G. Robertson, Monticello, John T. Blanks, Baxter. and Sidney Harris, Wilmar, have been appointed members of Drew County Board of Health.

CALIFORNIA.

Memorial to Dr. Brown.—As a fitting testimonial of her worth, the friends of the late Dr. Charlotte Blake Brown have raised a fund of $3,000 to endow a bed in the Children's Hospital of San Francisco.

Loses License.—On the allegation of unprofessional conduct, the license of Dr. Jessie Aldrich, Los Angeles, was revoked, August 22, by the State Board of Medical Examiners. The specific charge against Dr. Aldrich was that she had advertised a "sure cure" for cancer.

Chiropractic Found Guilty.—Thomas H. Story, a chiropractic of Los Angeles, was fined $500, August 27, with the alternative of 180 days' imprisonment in the city jail, for practicing medicine without a license from the State Board of Medical Examiners. He threatens to appeal, and says that the physicians of a dozen schools of drugless remedies will aid him in his fight.

Personal.—Dr. Frederick J. Crease, Bakersfield, has resigned as president of the Kern County Medical Association, and Dr. Henry W. Owen, Bakersfield has been elected in his stead.——Dr. John W. Trueworthy, Los Angeles. is reported to be in a critical condition from concussion of the brain as a result of the wreck of a Pasadena electric car, August 16. ——Dr. Albert W. Kirk has been appointed volunteer oculist; and Drs. Emma C. La Fontaine and L. H. Young. all of San Francisco, have been appointed volunteer school inspecting physicians.——Dr. Raymond Russ, San Francisco, has been appointed instructor in surgery in the medical department in the University of California.——Dr. Dumont Dwire, Oxnard. health officer of Ventura County. left for Europe August 23. ——Dr. Caroline S. Merwin, Oakland, has gone to China to take charge of a Presbyterian Missionary Hospital at Chinaufu.

COLORADO.

Appeals from Decision.—Dr. William M. Bonnet. Denver. has asked for a new trial in the damage suit decided against him in favor of Mrs. Emma C. Foote, for malpractice in May last.

Hospital Reopened.—The Miners' Union Hospital at Telluride, which has been closed since the miners' strike in September, 1903, was reopened September 1, and will be in charge of Dr. John G. Sheldon.

Personal.—Dr. Lewis E. Lemen, Denver, has been appointed chief surgeon of the Moffat Railroad, and Dr. Hugh L. Taylor assistant chief surgeon.——Dr. Maurice Kahn, Leadville, has been appointed captain and assistant surgeon in the National Guard of Colorado.—Police Surgeon Dr. Francis E. Prewitt, Denver, has resigned.

DISTRICT OF COLUMBIA.

Personal.—On the recommendation of the superintendent of the Washington Asylum, Dr. J. H. Constas was appointed resident physician at the Asylum Hospital, vice Dr. T. J. Sullivan, removed.——Dr. Henry C. Macatee has been appointed medical instructor of public schools, and Dr. Edmund Barry a member of the board of police and fire surgeons.

Typhoid Fever.—On August 26, 16 new cases of typhoid fever were reported at the Washington health office; the number reported since July 1 is now 408. and 286 patients were under treatment on August 25. The district officers do not look for a change in conditions until the middle of September, when the filtration plant is expected to be in full operation.

FLORIDA.

Personal.—Dr. Thomas A. Williams, Jacksonville, is spending the summer abroad.——Dr. John W. Clerke, Green Cove Springs, who has been seriously ill, has returned from Jacksonville and is now convalescent.

Health Board Official Dies.—Mr. R. L. Durrance, executive clerk for the State Board of Health for a number of years, died at his home in Jacksonville August 7 from appendicitis, aged 28. He was an efficient and faithful official and his death will prove a serious loss to the board.

Medical Examiners Approved.—Drs. J. D. Fernandez, Jacksonville; J. Harris Pierpont, Pensacola; Henry E. Palmer, Tallahasse; J. Harrison Hodges, Gainesville; John B. Maloney, Key West; Alonzo L. Blalock, Madison, and R. L. Harris, Orlando, have been appointed members of the State Board of Medical Examiners.

State Health Board Formed.—Captain Harry Fozzard, Jacksonville, has been appointed, and Dr. Horace L. Simpson, Pensacola, and Hon. E. M. Hendry, Tampa, have been reappointed members of the State Board of Health. Dr. Joseph Y. Porter, Key West, holds over as state health officer, as he was elected for that office for four years in February last.

GEORGIA.

Will Probated.—The will of the late Dr. Robert H. Hightower, Dublin, was probated August 10. The estate is appraised at about $60,000.

[illegible] itarium.—The trustees of the State [illegible] ask for an appropriation for 1906 [illegible] of $407,000.

Sanatorium Opens.—The Piedmont Sanatorium opened at Atlanta under the charge of Dr. Ludwig Amster, with Dr. Maloney, formerly of the Grady Hospital, as assistant. Dr. Floyd W. McRae will have charge of the surgical department.

Personal.—A fire in the office of Dr. J. Clarence Johnson destroyed his books, papers and instruments July 28.——Dr. Charles F. Benson, president of the Atlanta Board of Health, is seriously ill with typhoid fever.

Hospital Notes.—The Wesleyan Memorial Hospital, Atlanta, was formally dedicated with appropriate services August 19. Bishop Warren Candler delivered a dedicatory address, and Dr. J. Scott Todd spoke on behalf of the medical board of the [illegible] has just built a new city hospi[illegible]ment of about $12,000.——The Macon city hospital will receive from this time on $5,000 annually from Bibb County and a like amount from the city.

Beneficiary Scholarships.—The following appointments to the beneficiary scholarships at the Medical College of the University of Georgia have been made by the governor: C. M. White, Columbus; J. D. Delmar, Whitesville; G. T. Bernard, Athens; Frank C. Harpe, Buena Vista; W. H. Sutton, Swainsboro; L. L. Lanier, Stillmore; S. T. Register, Lennox; G. T. Crozier, Cedar Springs; Edmund W. Carter, Carsonville; Guy G. Lunsford, Americus; P. J. Brown, Newman; W. B. Spain, Talbotton; E. S. Harris, Bethlehem; M. F. Hurst, Monroe; W. B. Goddard, Milner; George L. Johnson, Yatesville; W. A. Arnhold, Carrollton; Sam C. Cheney, Silver

Creek; O. S. Wood, Madison; Charles T. Ridley, Hillsboro; T. L. McCurry, Centerville; J. S. Burrell, Clayton; Fred A. Lowe, Augusta; C. E. Stapleton, Gibson; J. D. Peacock, Quitman, and Henry Smith, Sirmans.

ILLINOIS.

Physicians Injured.—Dr. Ralph E. Niederinghaus, Granite City, was painfully, though not seriously, injured in a runaway accident August 31.——Dr. Henry C. Fairbrother, one of the oldest practitioners of East St. Louis, was injured internally by falling into an excavation August 31.——Dr. George M. Straight, Winchester, was painfully bruised in a runaway accident August 31.

Chicago.

Personal.—Dr. N. Senn returned from Greenland September 11.——Dr. Truman W. Brophy has returned after a summer abroad.

Fined for Illegal Practice.—H. Wolff, prosecuted by the State Board of Health on a charge of practicing medicine at 503 Sangamon street without a license, was fined $200 and costs September 5.

Smallpox Checked.—There are at present only eight smallpox patients in the Isolation Hospital, and all of these are convalescent. There have been no new cases for two weeks, and it is hoped that the disease is effectually checked.

Decrease in Typhoid Fever Death Rate.—Fourteen years ago Chicago had the highest typhoid fever death rate of any large city in the world, amounting to 17.22 per 10,000 population. For 1904 the rate was only 1.92 per 10,000, which places Chicago among the lowest, in this regard, of all large cities.

The Unstable Laboratory.—It is now currently reported that the laboratory of the Health Department, which was reported, first, to have been moved to the city building at Michigan avenue and Fourteenth street and, then, to the Galbraith building at Franklin and Madison streets, will remain in its old quarters in the City Hall.

Acquire Property.—The Illinois Charitable Eye and Ear Infirmary has acquired one hundred feet additional frontage on Peoria street for $20,000, on which will be erected a fireproof addition to the present structure. The legislature recently appropriated $75,000 for this purpose.——The Washington Park Hospital has acquired a lot on Sixtieth street, 50 by 150 feet, on which an addition will be built.

The Week's Deaths.—During the week ended September 9, 500 deaths were reported, 10 less than for the previous week and 57 more than for the corresponding week of 1904. The respective annual death rates per thousand are 13.09, 13.35 and 11.98. Of the deaths, 147 were of infants under 1 year. Acute intestinal diseases caused 124 deaths; violence, including suicide, 55; consumption, 44; nephritis, 38; nervous diseases, 29; pneumonia, 28, and heart disease, 27.

IOWA.

Hospital Burns.—The Somers Hospital, Grinnell, was burned to the ground early on the morning of August 30. No casualties occurred, but the loss is about $3,000.

Carbolic Acid Sale Regulated.—The physicians of Des Moines are heading a movement to have a law passed by the legislature which will place carbolic acid on the same basis as morphin and other drugs as regards its sale. The necessity for this law is evident from the increasing number of cases of suicide from carbolic acid, which can be obtained at present without the restrictions under which cocain, morphin and other poisons are sold.

Medical Colleges Open.—The Sioux City College of Medicine opens for its fall term September 19. The new members of the faculty are: Dr. E. A. Jenkinson, professor of embryology; Dr. W. R. Mahood, professor of physiology; Dr. Isaac E. Nervig, assistant professor of anatomy; Dr. E. Ruel Wheeler, assistant professor of physiology, and Dr. Alexis M. Warren, professor of surgery.——Keokuk Medical College has added to its faculty Drs. Frank B. Hiller, Kahoka, Mo.; Frank P. Norbury, Jacksonville, and C. R. Armentrout, Keokuk.

Personal.—Dr. William G. Morton, Iowa Falls, has been appointed assistant surgeon at the Soldiers' Home, Marshalltown.——Dr. Channing E. Dakin has been appointed school physician of Mason City.——Dr. Lucius French, Davenport, who was recently operated on for gallstone disease, is making satisfactory progress.——Dr. William B. La Force and wife, Ottumwa, arrived from Europe August 30.——Dr. E. R. Walizer, Des Moines, was committed to the State Insane Hospital at Clarinda August 21.——Dr. Timothy J. Caldwell, ex-senator, Adell, is critically ill with rheumatic endocarditis.——Dr. A. A. Noyes, Mason City, has been made a life member of the Cerro Gordo County Medical Society.——Dr. Kirk Jaenecke, Clinton, sails for Europe from Montreal this month.

MARYLAND.

Personal.—Dr. Herbert E. Zepp has formed a partnership in practice with Dr. A. B. Glascock of St. Michaels, Talbot County.

Good Roads Physician.—Dr. V. M. Reichard of Fair Play is displaying talent and public spirit in building good and cheap roads in his section. In addition to a large practice he holds the office of road supervisor of his district. He finds it possible to construct macadamized roads, if there be no grading, for about $550 per mile. His crushed stone costs him about 45 cents a perch.

Baltimore.

Injured.—Dr. Edwin Geer, commander of the Maryland Naval Reserves and surgeon of the city fire department, was painfully injured September 6 by falling from a street car.——Dr. Joseph C. Wunder, in an effort to save a pigeon from a cat September 1, fell from a porch and broke his jawbone.

Personal.—Drs. William Green and Thomas H. Buckler are in Paris.——Dr. John McF. Bergland has gone to North Hatley, Canada, to hunt deer.——Dr. Ira Remsen has returned from his summer vacation at Northeast Maine in order to attend a meeting of the sewerage commission, of which he is a member.

Sewerage System.—The first practical step was taken September 7 by the commission engaging a board of three advisory engineers, to study the situation, to recommend the best method for disposal of sewage and to give an estimate of its cost. It was decided that the sewage before emptying into the bay or river shall be as pure as possible, to avoid possible injury to the oyster and fish industry of the state. The advisory engineers selected are Messrs. Rudolph Hering of New York, Frederick P. Stearns of Boston, and Samuel M. Gray of Providence, and they were requested to recommend a chief engineer to the commission, and to present their report not later than April 1, 1906, and earlier, if possible. Each of the three advisory engineers receives $5,000 as a fee, and additional $5,000 for outside work to be done and traveling expenses.

NEW JERSEY.

Camden's Health Report.—During August only 16 cases of contagious disease were reported to the Board of Health as follows: Scarlet fever, 5; typhoid fever, 2; diphtheria, 1, and tuberculosis, 8.

Diphtheria Epidemic.—An epidemic of diphtheria is reported at Port Republic, near Egg Harbor City. A number of deaths are said to have occurred, and public meetings are prohibited for the time being.

Hospital Report.—The report of Cooper Hospital, Camden, for August shows that 84 patients were admitted to the hospital during the month, and that there were 50 remaining September 1. In the dispensary 412 new cases were treated, and 1,352 visits were made.

Lower Death Rate.—The annual report of the New Jersey State Board of Health, just issued, shows that the death rate in the state per 1,000 of population, for 1903, was 15.87, or .04 less than for the previous year. There has been, generally speaking, a decrease since 1892, when the rate was 21.62 per 1,000. The births for the year were 37,242, or 18.47 per 1,000 of population, and the deaths 31,820.

NEW YORK.

Property Given Hospital.—At the gift fair for the German Hospital, Buffalo, a two-story brick house and lot at 934 Fillmore Avenue, valued at $5,000, was presented to the hospital.

More Insane Patients Transferred.—The transfer of 500 patients from King's County State Hospital to the Rochester State Hospital and Willard State Hospital was completed September 7. There were 290 patients transferred to the Rochester State Hospital and 210 to the Willard.

Buffalo Wants Better Water.—An advisory commission composed of expert engineers has been appointed to pass on plans for the improvement of the city water system. The board consists of Col. Thomas W. Symons, U. S. A., Rudolph Hering of New York, and Gen. George S. Field of Buffalo.

Buffalo Personals.—Drs. Roswell Park and Edgar McGuire, who sailed from Montreal on the *Victorian*, were obliged to transship when their steamer grounded in the St. Lawrence above Quebec, took train to New York and sailed on the *Caronia* next day.——Dr. Floyd S. Crego returned home from a nine months' visit to Europe.——Dr. Charles G. Stockton has returned from the Pacific coast.

New York City.

Seven More Suspects.—Seven voyagers on the steamer *Advance*, from Colon, were detained at quarantine and taken to Hoffman's Island for observation on account of high temperatures.

Fire at Child's Hospital.—On September 8 fire broke out in the wing of the Child's Nursery and Hospital, which has been leased by the Rockefeller Institute for Medical Research. Very little damage resulted.

Personal.—Dr. and Mrs. Charles Phelps arrived on the *Koenigin Luise* September 8.——Dr. James E. Newcomb's house was broken into by thieves, who carried away about $300 worth of jewelry.——Dr. M. C. O'Brien has returned after two months' vacation at Old Orchard, Maine.

Ambulance Accident.—The Kings County Hospital ambulance, while going at full speed, collided with a large touring car. Two of those in the touring car are expected to die. The ambulance surgeon escaped with slight injuries and explained that the high speed of the ambulance was deemed necessary on account of the condition of the patient he was taking to the hospital.

Contagious Diseases.—There were reported to the sanitary bureau for the week ended August 26, 429 cases of tuberculosis, with 175 deaths; 329 cases of typhoid fever, with 20 deaths; 132 cases of diphtheria, with 15 deaths; 115 cases of measles, with 6 deaths; 54 cases of scarlet fever, with 2 deaths; 14 cases of cerebrospinal meningitis, with 15 deaths, and 3 cases of varicella.

Still Refuse Use of Mails.—The District Court of Washington, D. C., denied the application of the New York Institute of Physicians and Surgeons for a mandamus compelling the postmaster general to restore to the institute the use of the mails which he had previously denied by an official order. The court held that there was reasonable ground for the conclusions reached by the department.

New Graft Game.—There has been a man at work in the Bronx and elsewhere who calls on physicians, telling them of an imaginary ill. The doctor makes an examination and finds the man's heart on his right side. The patient seems alarmed and the physician becomes interested. Then the patient makes a strike for $2 or $5, promising to call again. This new game has been worked successfully.

Personal.—Dr. George W. Kunz has been appointed by the state department a delegate to the International Congress for the Study of Radiology and Ionization, to be held in Leige, Belgium, this month.——Dr. and Mrs. Charles E. Nammack arrived on the *Oceanic*, August 31.——Drs. W. B. Anderton and George W. Jacoby arrived on the *Kaiser Wilhelm der Grosse*, August 29.——Dr. and Mrs. Edwin Atwood sailed for Europe on the *Finland*, September 2.

To Kill Staten Island Mosquitoes.—The contract for draining the south marshes of Staten Island has been awarded and work will be begun at once. Petroleum-spraying machines were sent to infected spots, and the people were asked to cooperate with the authorities in combating these pests, and as a result there has been a marked decrease in the annoyance from mosquitoes. Dr. Doty expresses himself as confident that in due time the mosquito will be extirminated from this locality.

Keepers Locked Up with the Insane.—Two attendants of the Manhattan State Hospital for the Insane, on Ward's Island, who had four demented patients in charge, were locked up on September 1 by the Chicago police on the suspicion that they were trying to foist their patients as public charges on the state of Illinois. This has caused indignation at the hospital and at the office of the State Board of Alienists, as the men were provided with all credentials necessary to show that the patients were residents of the state of Illinois.

Record Month for Typhoid.—Between July 29 and August 30 the typhoid fever cases reported to the *Board of Health* numbered 1,128. This is the highest number of cases in one month for years. The cases in August of last year numbered 413. From Saturday, August 26, to Wednesday, August 30, 157 cases were reported, 98 of which appeared in Brooklyn, and during the month there have been 579 cases in that borough. Few are now appearing in the Bath Beach section, where they were especially numerous a few weeks ago.

Sue City for Poisoning.—As the result of the death of two men in the Cumberland Street Hospital, Brooklyn, after carbolic acid had been administered instead of whisky, by mistake, claims for damages amounting to $50,000 have been filed against the city. Both men were in a serious condition on the night of Dec. 27, 1904, when whisky was ordered and the nurse administered carbolic acid by mistake, but Superintendent Bacon claimed that the men would have died in any case and the carbolic acid only hastened the end.

Activity at Quarantine.—As the result of the discovery of cholera at Hamburg a conference was held at Quarantine, September 1, between Dr. Alvah H. Doty, health officer of the port, and representatives of the transatlantic steamship lines, at which it was agreed that extra precautions should be observed in receiving immigrants from German ports. All passengers from infected localities will be kept at the ports of embarkation under medical inspection for six days previous to departure. During the voyage to this port all steerage passengers will be subjected to medical examination and inspection twice a day, and everyone found ill will be isolated.——The Panama Railroad steamer *Havana* arrived at Quarantine August 31 with one case of yellow fever aboard. Five passengers with suspiciously high temperatures have been held and are being closely watched.——The Portuguese steamer *Peninsular*, which arrived in port September 1, had on board one case of smallpox. The passengers who were exposed to contagion were sent to Hoffman Island for observation.

Prospect of Filtered Water Supply.—A pamphlet entitled "Report on Filtration of the Water Supply of New York City," by Dr. Thomas Darlington, commissioner of health, has been published, which sets forth the reasons why a filtration plant should be installed for this city. Dr. Darlington presents a number of carefully prepared charts showing the reduction of typhoid mortality by the filtration of water. During the past five years the number of cases of typhoid fever in New York City are as follows: For 1900, 2,658 cases, with 718 deaths; for 1901, 2,748 cases, with 721 deaths; for 1902, 3,871 cases, with 765 deaths; for 1903, 3,671 cases, with 653 deaths; for 1904, 3,412 cases, with 661 deaths. During the same period the deaths from diarrheal diseases were: For 1900, 6,695; for 1901, 6,773; for 1902, 5,767; for 1903, 5,120, and for 1904, 6,527. It is probable that many of these deaths were due to contaminated water. Dr. Darlington estimates that the cost of filtering the water supply of 500,000,000 gallons daily would be $17,000,000, and the annual cost of operation $900,000.

Report of the Pneumonia Commission.—This commission, which was appointed in August, 1904, by the Board of Health, and began its work in October, has made public its first report. The commission consisted of Drs. Edward G. Janeway, William Osler, William H. Welch, T. Mitchell Pruden, Theobald Smith, Frank Billings, John H. Musser, L. Emmett Holt, Francis P. Kinnicutt, Thomas Darlington and Hermann M. Biggs. This report showed that the pneumonia germs were found in 95 per cent. of those examined. In discussing this question, it says that there is a possibility that pneumococci of greater virulence than those found in the mouth are inhaled with the air current, determining the onset of the disease. There would seem to be evidence that the pneumococcus may suddenly appear in the so-called normal mouth, that certain individuals carry the organism in their mouths for considerable periods of time, and that even those persons in whom the organism can not be demonstrated at every examination may harbor the pneumococcus in the less accessible portions of the respiratory tract. The study of the communicability of pneumonia led the commission to the conclusions that (1) "normal" individuals in whose mouths the pneumococcus is repeatedly found to be absent may acquire the organism by association with cases of pneumonia or with "positive normal" persons; (2) the handkerchiefs of pneumonia and "positive normal" cases may be regarded as means of transportation of the pneumococcus from person to person. A vigorous attempt was made to develop a serum which might be used either to ward off the pneumonia or to assist in ridding the blood of the germs after the disease had been contracted. They found that all pneumococci were agglutinated by means of pneumococcus immune serum; an immune pneumococcus serum was found capable of agglutinating various pyogenic streptococci, certain atypical organisms and several strains of the *Streptococcus mucosus capsulatus*; the serum of pneumonia patients varied in its power to agglutinate different pneumococci. Some strains were agglutinated, others not.

PENNSYLVANIA.

Personal.—Dr. Philip Y. Eisenberg, Norristown, was thrown from his carriage, September 5, and sustained painful but not serious injuries.

Bequest to Hospital.—The late Bethuel T. Hall has bequeathed to the Chester Hospital $3,000 as an endowment fund, the income of which is to be used in the general conduct of the hospital. The endowment is made in memory of his mother, Sarah Hall, and his aunt, Charlotte Cloud.

Oil City Working Against Tuberculosis.—The Grand View Institution, Oil City, which is devoted to the care and treatment of consumptives, has raised $6,500 and expects to erect an additional building to accommodate twenty-four patients. At present the institution accommodates fifteen patients, some of whom are living in tents.

Typhoid at Nanticoke.—An epidemic of typhoid fever has broken out in Nanticoke, near Wilkesbarre. Up until September 7, 224 cases had been reported. A committee appointed by the Board of Health to investigate the water supply found one house in which typhoid fever existed and from which drainage contaminated the streams leading to the reservoir. The official report of the investigation has not yet been made public.

Medical Society Pays Costs.—In the case of "Dr." A. Witman, charged by the Monessen Medical Society with practicing medicine without a license, the defendant was acquitted and the costs charged against the medical society. This peculiar result was attained because when the case was called the defendant did not appear. The prosecuting attorney insisted that his cash bail bond of $400 be forfeited, but the defendant's attorney, declaring that he would try the case without the defendant, obtained a favorable decision for his client.

Doctored Milk on the Decrease.—Reports of the Dairy and Food Commission during the past month show a decrease in the amount of doctored milk dispensed. Of a total of 460 samples of milk and cream taken by the Dairy and Food Commission agents for analysis, only 5 were such as to justify prosecution. Two years ago examination revealed that more than 33 per cent. of the samples taken were preserved with formaldehyd, boric acid, or were watered, skimmed or colored in violation of law. The total receipts of the Dairy and Food Commission during June, July and August were $13,527.14, nearly all of which was fines. The receipts since January only for oleomargarine and renovated butter licenses were $31,000.

Personal.—Dr. J. Edward Dickinson, Harrisburg, has been elected anesthetist on the staff of the Harrisburg Hospital. ——Dr. M. C. Womack has gone on duty as resident physician at the Reading Hospital.——Dr. Harry J. Bell, Dawson, is taking a trip to the Pacific coast.——Drs. A. E. Mahood and G. R. Reid have taken up their duties as internes at Hamot Hospital, Erie.——Dr. Jacob O. Knipe, Norristown, fell while alighting from a trolley car, dislocating his shoulder and injuring his right knee.——Dr. William H. Lauman, Mount Holly Springs, has had a cerebral hemorrhage.——Dr. Arthur S. Brumbaugh, Altoona, reached New York from Italy September 7.——Dr. Charles B. Hough, Ambler, sustained a contusion of the leg in a train collision, September 4, at Brush, Colo.——Dr. A. F. Brundage, Hazleton, who recently resigned as United States consul at Aix-la-Chapelle, has returned to his farm at Conyngham.

Philadelphia.

Love Powders Dispensed.—John Brady, a self-styled doctor, with offices at 1208 Pine street, was arrested, charged with selling powders that were warranted to restore connubial happiness. The doctor's patrons asserted that the powders did not possess the necessary charms. He was held in $500 bail for trial.

Hospital Reports.—During August, Mount Sinai Hospital treated 3,825 cases, of which 423 were accidents, and 71 patients were admitted to the wards.——Samaritan Hospital treated 1,678 patients in the dispensaries; 257 of these were due to accidents, and 72 were admitted to the wards.——The Germantown Hospital treated 1,755 cases in the dispensary, and 283 patients were treated in the wards.

Mutual Aid Society of County Medical Society.—The Philadelphia County Medical Society gives financial aid to the widows and orphans of its members and to members in distress. The society also has a private room in the Polyclinic Hospital devoted to the care of sick members. Any information concerning the aid association can be obtained from Dr. Joseph S. Neff, treasurer, 2300 Locust street.

Health Report.—The deaths from all causes for the week numbered 374. This is below the normal, as there were 434 deaths in the previous week and 400 in the corresponding week of last year. The principal causes of death were: Typhoid fever, 12; whooping cough, 5; tuberculosis, 55; cancer, 20; apoplexy, 15; tetanus, 1; heart disease, 23; acute respiratory diseases, 16; gastritis, 5; enteritis (under 2 years), 37; enteritis (over 2 years), 8; Bright's disease, 29; accidents, 22, and marasmus, 13.

Personal.—Dr. Harry L. Randal escaped serious injury in a train wreck in Denver, Colo., September 5.——Dr. Thomas C. Potter, Germantown, has sailed for Europe.——Dr. J. Frank Meade, while returning from Atlantic City in his automobile September 5, was struck in the face by a stone thrown by some miscreant and painfully injured.——Dr. Fairfax Irwin, who was detailed to study the cholera situation in Germany, has, by order of the United States Public Health and Marine-Hospital Service, postponed his departure.——Dr. Richard Flavel Woods narrowly escaped a serious accident, August 13, when his automobile ran into a ditch and turned completely over, burying Dr. Woods beneath it. Before he was rescued the flames of the exploding gasoline had caused serious burns.——Drs. Lawrence F. Flick, Joseph Walsh, Mazyck P. Ravenel and Daniel J. McCarthy sailed, September 16, to attend the International Congress on Tuberculosis in Paris.

Organizing the Profession.—The weekly roster of the medical organizations of Philadelphia has the following to say concerning the organization of the profession: "Consolidation of common interest has in recent years marked all of the activity, and the medical profession forms no exception to this world-wide movement. Its newest development tends to confirm the dictum that in union is strength. In the American profession, with the county society as the unit, membership therein leading through the state society to the national association, we find physicians organizing with an eagerness never before shown in any section of the land. Stimulated by this crusade, its latest phase is presented in a systematized enrollment of the practitioners of the great cities. The Philadelphia County Medical Society is a noteworthy example in that, through originating the "branch" feature, the membership is now at the 1,200 mark, with 1,800 in view. Branch societies will hold monthly meetings in, ultimately, every section of the city, and the scientific value of the meeting programs has risen just as steadily, so that systematized postgraduate courses of instruction for members may be the final object."

TENNESSEE.

New Infirmary in Memphis.—Drs. Frank D. Smythe and Bennett G. Henning, Memphis, are about to erect a sanitarium in Memphis, to cost $30,000.

College Merger.—The Tennessee Medical College, Knoxville, has decided to become the medical department of Lincoln Memorial University, Cumberland Gap, and the new hospital which is being erected by the college will be known as the Lincoln Memorial Hospital.

Personal.—Dr. Archibald L. Elcan, Memphis, was tendered a farewell dinner, September 2, by seven of his professional associates. He leaves for Los Angeles, Cal., in a few days. ——Dr. Raymond Wallace, Chattanooga, returned from Europe on the *Baltic* August 17.——Dr. Newman Taylor, Brunswick, has been appointed assistant physician at the Shelby County Asylum for the Insane, vice Dr. James K. Castles, Memphis, deceased.——Dr. Carroll M. Lovell, Dickson, has been appointed local surgeon of the Nashville, Chattanooga & St. Louis Railroad, vice Dr. Edward W. Ridings, deceased.——Dr. Richard M. Little, Dresden, was injured in a runaway accident August 10.

TEXAS.

New College Building.—The new building for the medical department for the Southwestern University, Dallas, will be ready for occupancy early in October.——The Fort Worth Medical University expects to erect a new medical college building, at a cost of from $40,000 to $50,000.

Banquet to Dr. Graves.—The Bexar County Medical Association tendered a farewell banquet to Dr. Marvin L. Graves, retiring superintendent of the Southwestern Insane Asylum, San Antonio, August 10, at which resolutions were adopted regretting his departure to accept the position of chair of theory and practice of medicine in the State University, and commending the wisdom of the State Board of Regents for its selection of Dr. Graves for this position.

Personal.—Dr. Q. Cincinnatus Smith has moved from Austin to San Diego, Cal.——Dr. Aug. D. Ferguson, Kingsville, has moved to Dallas.——Dr. and Mrs. Robert L. Harris, Fulshear, have gone to New York.——Dr. Thomas O. Maxwell, for fifteen years first assistant physician at the State Lunatic Asylum, Austin, has been made superintendent of the Southwestern Insane Asylum, San Antonio, vice Dr. Marvin L. Graves.——Dr. James H. Eastland, Waco, has been appointed first assistant physician at the State Lunatic Asylum, Austin, vice Dr. Maxwell, transferred.——Dr. Willis E. Lowry has succeeded Dr. Shaver as state health officer at Laredo.——Dr. M. G. Pierce, Hookerville, fell, August 6, dislocating his left hip. His advanced age renders the injury more severe.

GENERAL.

Plague in Hawaii.—A death from plague is reported from Waipahu, near Honolulu, August 30.

Personal.—Dr. Jean Guiteras, professor of tropical diseases and pathology in the University of Havana, has been made Dean of the University.

Quarantine Against New Orleans.—The governor of Jamaica has declared quarantine against New Orleans and the republic of Panama (including the Canal Zone), in view of the prevalence of yellow fever in those places.

THE YELLOW FEVER SITUATION.

New Orleans.—The teamsters went on strike last week, interfering materially with sanitary work.——New cases September 11, 38; deaths, none; total cases to September 11, 2,343; total deaths to September 11, 321; death rate, 13.7 per cent.; new cases September 4 to 11, inclusive, 240; deaths September 4 to 11, inclusive, 28.——Capt. B. F. Clayton, quartermaster, U. S. Army, has yellow fever.——An Italian died of yellow fever, his case not having been reported, and his relatives threw his body into Lake Ponchartrain.——The New Orleans *States* keenly scores Dr. Eugene Wasdin, United States Public Health and Marine-Hospital Service, because while in charge at Gulfport, Miss., he failed to find the yellow fever in the little place until it had existed for two or three weeks and until the Alabama officials inspected the town. The *States* asks for the withdrawal of the surgeon.——Assistant Surgeon William C. Rucker, United States Public Health and Marine-Hospital Service, is ill with yellow fever.——The attempt to change annual moving day from September 1 to October 1 had to be abandoned on account of legal obstacles. Arrangements were made, however, for proper fumigation of all premises where a change of tenants occurred.——The United States Public Health and Marine-Hospital Service estimates that, comparing the epidemics of 1878 and 1905 up to September 5, modern methods have saved New Orleans at least a million dollars.——The New Orleans Health Association has become a permanent organization.——Fumigation of houses and educational mass meetings continue throughout the city.——Dr. Charles F. Chassaignac, New Orleans, has volunteered to take charge of the deplorable situation at Tallulah.

Louisiana.—During the week the epidemic has spread slowly. The following is the record of the week, outside New Orleans: Tallulah, 54 cases, 1 death; Lake Providence, 36 cases, no deaths; Patterson, 49 cases, 3 deaths; Kenner, 15 cases, 3 deaths; Hanson City, 23 cases, no deaths; Jefferson, 3 cases, no deaths; St. Rose, 4 cases, 10 deaths; Pecan Grove, no cases, 3 deaths; St. Bernard, 8 cases, no deaths; Venet, 1 case, no deaths; Kinlin, 2 cases, no deaths; Fisher's, 2 cases, no deaths; Amelia, 6 cases, no deaths, Belle Grove, 6 cases, no deaths; Moise, 2 cases, no deaths; Donaldsonville, 3 cases, no deaths; Pointe Celeste, 25 cases, 6 deaths; Woodlawn, 12 cases, 1 death; Greenwood, 1 case, no deaths; Bayou Boeuf, 4 cases, no deaths; Riverside, to September 8, 180 cases, 7 deaths; La Fourche, 4 cases, 2 deaths.——During the week there was grave rioting among the Italians at Patterson, who resisted the efforts of the sanitary officers.——Quarantines continue to be modified.——Up to September 6 there have been 1,075 cases of yellow fever, outside of New Orleans, in Louisiana, Mississippi, Alabama, Georgia, Florida and Missouri. There have been 125 deaths in the same territory, or about 12 per cent.——The Shreveport *Times* relates a case illustrating the hardships of local quarantines. A medical student of Shreveport, going home from New Orleans, was stopped at the bridge into the town and turned back. He got off the return train at Dubberly, Miss., where he was told it would not be safe to remain after dark. He walked to Sibley, another small town, where he was told to move on. He left that place in a livery rig. After a day or two more he arrived at Bossier City, near Shreveport, where he had a talk with Dr. E. Edgar Schumpert of the local board of health, who refused him admittance to the detention camp, as there was one at Bossier. At the Bossier camp Dr. Coleman told him that as he was not a resident of Bossier he had just one hour to leave the town. There the story ended.——At Tallulah the infection is widespread. Dr. George H. Tichenor, Jr., New Orleans, in charge there, reported that he could not obtain public support for the necessary sanitary measures, and asked to be relieved. At last reports Dr. Charles F. Chassaignac of New Orleans had volunteered to take charge.

Other States.

Alabama.—A new relay camp has been established at Flomaton for the inspection and detention of passengers from Pensacola, Fla.

Arkansas.—In addition to the four members of the state board of health last week reported as having resigned, Dr. William Jackson, Jonesboro, has resigned later. Governor Davis has appointed the following new members: Drs. Joseph P. Runyan, president, Little Rock; Dr. Joseph P. Sheppard, secretary, Little Rock, and Dr. Robert A. Hilton, Eldorado. Later he added Dr. John R. Dibrell, Little Rock. The new board of health promptly declared absolute quarantine against Mississippi and Louisiana, even proclaiming: "No certificates recognized from either of these states." It declared that, as rapidly as possible, all four boundaries of the state would be guarded. Freight from the infected states will not be allowed to come in until fumigating stations have been established at the expense of the railroads. The railroads, furthermore, were ordered to maintain detention camps at all points where they cross the boundary. The new board then turned its attention toward persuading the various quarantined towns in Arkansas to abandon their restrictions, trusting entirely to the state quarantine. The Little Rock *Gazette* severely criticized the action of Governor Davis in refusing permission for a surgeon of the United States Public Health and Marine-Hospital Service to pass on a special train through a small stretch of Arkansas territory, even as an act of charity to a suffering community in Louisiana. Arkansas citizens keenly feel the disgrace of their state.——Pine Bluff has raised its local quarantine.——From Mammoth Springs there comes complaint that the militia, as quarantine guards, held a fast mail train at Thayer, Mo., for two hours, while the passengers were made to purchase health certificates at $1.25 each. Those who could not pay were put off the train, according to the Little Rock *Democrat*.——The Rock Island Railway has put in a fumigating plant at Bridge Junction, opposite Memphis.

Florida.—Two new cases were reported from Pensacola on September 5, two the following day, two on the 7th and on the 8th, 11 new cases and one death.——Dr. Stephen M. Gonzalez, in an interview in a local paper, said there was no yellow fever in Pensacola and that physicians were reporting it only for purposes of graft. He was arrested, tried and sentenced to 30 days in jail, sentence being suspended during good behavior.——Many new suspicious cases are under investigation.

Georgia.—On September 2 a man, recently arrived from Pensacola, Fla., developed yellow fever and was properly isolated, but died 3 days later.——By a vote of 5 to 3 the city board of health of Atlanta refused to quarantine against infected points. The medical members were reported as voting for quarantine.——A number of Georgia towns quarantined against Atlanta, and the State Board of Health had previously passed a resolution demanding that Atlanta quarantine against infected points. There are said to be 7,000 refugees in Atlanta.——On September 7 the State Board of Health quarantined the entire state against all infected points.

Indian Territory.—Following the report of a suspicious case at Maysville, the United States Public Health and Marine-Hospital Service has taken charge of the situation at that place.

Mississippi.—Dr. Joseph Goldberger, United States Public Health and Marine-Hospital Service, addressed the physicians of Natchez on methods of meeting the infection.——Having had demonstrated the failure of shotgun quarantine, Natchez is now fumigating and taking other rational measures to check the epidemic.——During the last week Natchez has reported 5 new cases, Gulfport 1, Mississippi City 2, Pearlington 1, Sharkey county 1, Corinth 1, Vicksburg 4 (25 in all), and Fostoria 1.——A negro from Gulfport eluded the quarantine guards at Pass Christian and entered that popular resort. He was later caught, and, it is reported, chained to a tree for two days, exposed to sun and rain and unable to protect himself from mosquitoes. As soon as the federal officers heard of this medieval brutality the negro was liberated and put in the detention hospital.——It is reported yellow fever existed in Vicksburg as far back as July 20. At a meeting of Vicksburg business men, September 1, resolutions of confidence in the mosquito theory and the United States Public Health and Marine-Hospital Service were passed, and the local board of health was asked to modify its quarantine to accord therewith. This was done, and the United States Public Health and Marine-Hospital Service rules were adopted by the board of health, permitting the resumption of freight traffic.——Governor Vardaman, in a proclamation, has so fully accepted the conclusions of medical science that, in justice, some of his statements should be quoted. "The lesson of the Natchez fever ought to be taken well to heart by the people of the entire state. It shows conclusively that it is not enough to rely on quarantine vigilance alone. . . . It emphasizes the necessity of keeping ever closer watch on the internal conditions. . . . I have no hesitancy in expressing my firm conviction that the greatest danger is not so much in admitting the fever to our midst as in overlooking it after the first case has developed. . . . There is little danger when the first case is found and promptly handled in the recognized scientific manner."

Oklahoma.—Oklahoma has quarantined against Arkansas and the Indian Territory.

Tennessee.—Surgeon-General Wyman, United States Public Health and Marine-Hospital Service, replying to Memphis protests against Surgeon White's report of probable yellow fever in Memphis, wired to the state health officer as follows: "The report from yourself and from Secretary Hunter of the Mississippi state board is accepted here. I am satisfied with regard to the situation at Memphis as vouched for by yourself, Governor Vardaman and Secretary Hunter."——The State Board of Health has arranged for funds sufficient to maintain the quarantine until the coming of frost.

Texas.—State Health Officer Tabor addressed the McLennan County Medical Society on September 12.——Texas has quarantined against Memphis.——Galveston banks cashed the warrants necessary to keep the State Health Office in the necessary funds.

CANADA.

Winnipeg General Hospital.—The total number of patients treated in the Winnipeg General Hospital during the week ending August 19 was 326, of whom 201 were men, 81 women and 44 children; 60 out-patients were also treated.

Personal.—Dr. Allan Kinghorn, one of the house surgeons of the Toronto General Hospital, has been awarded the Johnston colonial scholarship in the University of Liverpool. He will take up original pathologic work, and succeeds a Canadian who held the scholarship last year.——Dr. J. Edwards of Grand Rapids, Mich., is visiting in Winnipeg.

Epidemic of Dysentery in Dawson.—A serious epidemic of dysentery is prevailing in Dawson and other points in the Klondike valley. Governor McInnes has convened a conference of the medical men of Dawson and outlying districts to ascertain, if possible, the cause of the disease and to inaugurate efforts to stay its ravages. Adults and children alike are suddenly prostrated with the disease, and numerous deaths have occurred.

Asylum Changes in Ontario.—Dr. Daniel Clark, for many years superintendent of the Toronto Asylum for the Insane, has resigned and has been succeeded by Dr. Charles K. Clarke, superintendent of the Kingston Asylum, who, in turn, is succeeded by Dr. E. Ryan, associate professor of clinical medicine in Queen's University. Dr. Charles E. Hickey, Morrisburg, Ont., has been appointed medical superintendent of the Coburg Asylum, replacing Dr. E. McNichol, who has been retired. Dr. John Williams, Lisle, Ont., has been appointed medical superintendent of the Asylum for Epileptics at Woodstock, Ont.

Canadian Medical Association.—The thirty-eighth annual meeting of the Canadian Medical Association was held at Halifax, August 22-24, and proved one of the best meetings in the history of the organization. The annual presidential address was delivered by Mr. John Stewart, M.B., Halifax; the address in surgery by Mr. Francis Caird, Edinburgh; the address in gynecology by Dr. Howard A. Kelly, Baltimore; the address in ophthalmology by Dr. J. W. Stirling, Montreal, and the address in medicine by Dr. D. A. Campbell, Halifax. The most important matter dealt with was the appointment of a special committee on reorganization, with Dr. A. McPhedran of Toronto as chairman. It was decided to meet in Toronto in 1906 at the same time as the meeting of the British Medical Association. The following officers were elected: President, Dr. Alexander McPhedran, Toronto; general secretary, Dr. George Elliott, Toronto; treasurer, Dr. H. Beaumont Small, Ottawa.

FOREIGN.

Esmarch Memorial.—The small town of Tönning, in Schleswig, Germany, was the scene August 6 of honors paid to F. von Esmarch, its famous son, when his statue was unveiled there. The municipality long ago placed a tablet on the house where he was born in 1823. The statue is more than life size and is a fine portrait of the great surgeon. It was erected by subscription, thousands wishing to show their appreciation of Esmarch's achievements in the systematic organization of first aid to the injured. It is not often that a scientific man is thus honored during his lifetime, but it is still less frequent for an untitled medical man to be the uncle by marriage of the reigning emperor of Germany. Esmarch married the Princess Henrietta of Schleswig-Holstein in 1872, one year before he published his views on the "Artificial Expulsion of Blood for Operations," describing the now familiar "Esmarch bandage."

Cholera in Germany.—It is reported by cable from Berlin that an official bulletin, issued September 8, announces that 19 new cases of cholera and 6 deaths occurred in the cholera-infected districts during the previous twenty-four hours. This makes a total of 123 cases and 39 deaths in the present epidemic. Berlin is placarded with posters warning householders to see that their premises are kept clean and the garbage properly disposed of, as cholera exists in eastern Prussia and communication with the affected districts can not be cut off. It is stated in one of the Berlin papers that some of the Berlin wholesale houses have sent circulars to their customers in infected towns instructing them not to communicate by mail with Berlin because of the danger of infection in the receipt of letters. It is also reported that cholera has broken out in Hamburg far from the points visited by Russian emigrants. An epidemic is feared, but it is being met by what is, perhaps, the most systematic preventive campaign ever undertaken. A sort of sanitary state of siege exists in the district that now extends from the river Oder northwestward to the Russian border, about 250 miles, and from Danzig to south of Posen, about 150 miles. But it is a state of siege in which all the inhabitants are auxiliaries of the medical authorities, and the only enemy is the terrifying cholera bacillus. The medical authorities are disseminating information by red placards, newspaper cautions and sanitary leaflets. Sanitary motor-boats patrol every stream, investigating river craft, seeing that waterside places and resorts are closed, and visiting the cholera stations established at intervals along the rivers. Every physician in the region is, in a sense, the agent of the Medical Council of War, which sits in Berlin. The commander-in-chief is Dr. A. Gaffky, and his special staff of 200 is being constantly increased. Conductors on the state railways are being taught the symptoms of cholera so as to be able to decide, when a person is sick on a train, whether the patient should be placed in a compartment by himself until a large town is reached where he can be sent off to a cholera station. Orders have been given to all employes who sell tickets or receive money from the public to disinfect their hands as often as possible. Dr. Fairfax Irwin, the surgeon in command of the Marine-Hospital Service at Philadelphia, has been ordered to Hamburg to study the cholera situation. He will be joined in Germany by Passed Assistant Surgeon McLaughlin, who is now stationed at Naples. Vigilant precautions are being taken at all the ports of entry of immigrants in this country. The cable and other reports speak of the epidemic in "West Prussia." This does not mean western Prussia, but the district of "West Prussia," bordering on Russia and the Baltic, in the northeastern part of the country.

Medical Consultant to the Muncipality.—As long ago as 1902 the local medical society of Cologne, Germany, petitioned the city council to appoint an "*arztlichen Beigeordneten*" to take charge of the matters for which municipal authorities are in the habit of asking the advice of physicians, or of putting through without any medical suggestions. Extraordinary expert knowledge and skill are required to deal properly with these matters, and the city should have a consultant constantly in its service. The authorities dismissed the appeal of the medical society at that time, but took it up again last year on the renewed solicitation of the society, and have finally created the office of a medical *Beigeordneten*, the first of its kind in any German city. His duties are defined as: 1, Suggestions for improved hygiene in all departments of municipal activity; 2, dwellings and health police, delivering of medical certificates, chairmanship of board of health and of board of oversight of police and dwellings; 3, vaccination; 4, supervision of health in the schools, contagious diseases among scholars and teachers, medical school inspectors; 5, responsibility for imposition of sentences; 6, oversight of food adulteration commission; 7, oversight of schools, hospitals and other public buildings from a hygienic standpoint; 8, membership on boards in charge of orphan asylums, hospitals, disinfection service, bacteriologic laboratory and free dispensaries; 9, member of school deputation, member of commission for meat, market and pure food inspection; 10, public baths, with membership in board in charge; 11, member of boards of vital statistics and medical statistics; 12, medical examination of government employes when taken into the service or granted leave of absence or pensioned. The local medical society is jubilant over its success in the creation of this new post. It regards it as most important progress. Medical skill and knowledge are here diverted into a new field which, when filled by a physician of exceptional training in hygiene and general matters, can not fail to be of the greatest benefit for the public welfare. The secretary of the medical society, in his annual report, comments further to the effect that "this enlarging of the sphere of medical activity will compel the profession more and more to look up, over and beyond the narrow confines of purely medical matters to the grander tasks of the community and of the state. For these the physician—perhaps more than the members of any other profession—is peculiarly fitted by his general and special training. Every physician now should strive to perfect himself more and more in general training, and to work with the greatest perseverance to help in solving the questions that confront the community and the state. This grand aim must not be obscured," he adds, "by the recent efforts of the authorities to aid in perfecting the various medical specialties." The *Münch. med. Wochft.* states that Dr. Krautwurst, hitherto *Kreisarzt* for the Cologne district, has been appointed to the position.

New Prussian Law in Regard to Communicable Diseases.—The text of the new and long anticipated law is given in the *Deutsche med. Wochft.* for July 20 and 27. It is evidently a compromise measure. The original bill required compulsory declaration of cases of tuberculosis and of venereal diseases, but this was amended to declaration of cases of death from tuberculosis. Declaration of cases of venereal disease was first amended to read "in military circles," and then the clause was finally dropped altogether. The law is in eight sections. The first contains the regulations in regard to compulsory declaration of cases and deaths. According to previous laws this was required only for six diseases: leprosy, cholera, spotted typhus, yellow fever, plague and smallpox, but the present law adds 16 to the list; diphtheria, epidemic cerebrospinal meningitis, puerperal fever, trachoma, relapsing fever, dysentery, scarlet fever, typhoid, anthrax, glanders, hydrophobia and bites from rabid or suspected animals, poisoning from meat, fish or sausages, and trichinosis. The declaration must be made within twenty-four hours after learning of the case, the deposition to be made to the police authorities. Also every death from tuberculosis. The physician called to the case is held responsible for the declaration, otherwise the head of the household, the person taking care of the sick one, the householder and the official verifying the disease. The second section is devoted to the determination of the disease. If the sick person is in the care of a physician, the officials wishing to ascertain the facts in the case are not allowed to enter if the attending physician fears injury to the health or life of the patient from their entrance. Opportunity for objection should be given the attending physician before the officials enter. In case of puerperal fever or suspicion thereof, the officials must obtain permission from the head of the household before they can enter. On suspicion of typhoid or glanders, postmortem examination may be required if the attending physician regards it as necessary to complete the diagnosis. In case of diphtheria, trachoma and scarlet fever the local police authorities are required to determine the disease only in the first few cases, and only when they have not been already declared by a physician. The authorities are empowered to extend these regulations to include other diseases when they assume an epidemic form. The third section of the law is devoted to prophylactic measures which are defined in detail for each disease, leaving nothing to the judgment of the local authorities. In respect to diphtheria, compulsory isolation is required, but children need not be taken to a hospital or other place of isolation against the wishes of the parents if the attending physician or the medical official thinks that sufficient isolation can be realized at home. In puerperal fever the midwife or obstetric nurse is to be informed of the presence of the disease at once, and she must refrain from attendance on any other childbirth during and for eight days after leaving the first case, and then only after thorough disinfection of her body, clothing and instruments, under instructions from the medical official, who is empowered to shorten the interval at his judgment. In typhoid fever, besides the usual measures of isolation, declaration of case and location, and disinfection, all public gatherings may be forbidden if the disease assumes an epidemic character. Six months' imprisonment or a fine of $150 is the penalty for using or allowing others to use articles for which disinfection is required before the disinfection has been done. The penalty for disregard of the measure requiring compulsory declaration by the physician or other responsible person is arrest or a fine of about $38, which is also imposed for preventing the enforcement of the official measures or the entrance of the medical officials. One section of the law defines the details of indemnification of parties for articles destroyed or injured by the officials in their prophylactic duties. The claim for damages must be presented to the local police authorities within a month, although further delay may be granted under certain circumstances. Articles to be destroyed or injured by the officials must be appraised by experts before their destruction.

Marriages

A. E. Carney, M.D., Owasa, Iowa, at Asbury Park, N. J., August 23.

Arthur G. Neighbor, M.D., to Miss Minnie La Grue, both of Fowler, Ind.

Phil R. Polk, M.D., to Miss Hattie Hamilton, both of Silver Creek, Miss.

W. H. Steele, M.D., Hastings, Neb., to Miss Alice Kimball of Chicago, August 27.

Bert N. Estabrook, M.D., to Miss Olive M. Bast, both of Detroit, Mich., August 29.

Carl O. Imoberstag, M.D., to Miss Mabel E. Sperber, both of Toledo, Ohio, August 30.

Earnest Empey, M.D., Billings, Mont., to Miss Hallie Spear of Omaha, August 30.

Guy H. Hutchins, M.D., Bowdoinham, Maine, to Miss Hortense Bradford, September 6.

George A. Pugh, M.D., Kenosha, Wis., to Miss Nellie Ball of Stratford, Ont., August 29.

Weston H. Rice, M.D., to Miss N. Nelle Hopkins, both of Burlington, Vt., September 2.

W. S. Polk, M.D., Oakvale, Miss., to Miss Beulah Williamson of Goss, Miss., at Society Hill.

Fred Roderick Dew, M.D., to Miss Bertha Blanche Young, both of Salem, W. Va., August 30.

Hedlie V. Tweedie, M.D., Baltimore, to Miss Edith D. Hutson, at Rawlings, Md., September 6.

George M. Decherd, M.D., Austin, Texas, to Miss Pansy Green of Granger, Texas, August 30.

Charles Martin Wood, M.D., Decatur, Ill., to Miss Edith Loose of Illiopolis, Ill., September 12.

Blanchard B. Pettijohn, M.D., Indianapolis, to Miss Zelda Klingler of Zionsville, Ind., August 30.

Pern Jefferson Bidwell, M.D., Toledo, Ohio, to Miss Virginia Moyer of Colfax, Ohio, August 29.

T. Lee Van Giesen, M.D., New Castle, Pa., to Miss Mabel E. Manbeck of Lebanon, Pa., August 30.

Maurice M. Reichard, M.D., Philadelphia, to Miss Frieda Deutsch in New York City, September 3.

William A. Briggs, M.D., Bowling Green, Ky., to Miss Ida Mai Harrison of Alton, Ind., September 6.

Byron G. Monkman, M.D., Portland, Ore., to Miss Nellie M. Sauer of Bay City, Mich., September 1.

Mont R. Farrar, M.D., Greensboro, N. C., to Miss Annie Pleasants of Dilworth, N. C., September 14.

George Gill Mulheron, M.D., Nut Bush, Tenn., to Miss Lillie Mai Walker of Durhamville, Tenn., September 6.

Leroy Philip Kuhn, M.D., Palmyra, Wis., to Miss Bessie Margaret Patterson of Chicago, September 9.

Julius W. Boiarsky, M.D., Huntington, W. Va., to Miss Florence Greenwold of Cincinnati, September 5.

Ralph K. Keene, M.D., Wessington Springs, S. D., to Miss Wilma H. Rouse of Lakefield, Minn., August 29.

Frank Foulk, M.D., Des Moines, Iowa, to Miss Wallace of Independence, Iowa, at Des Moines, September 3.

William A. Williams, M.D., to Miss Edna Z. Bacon, both of Hurne, Mo., at Kansas City, Mo., September 6.

Fred Albert Simmons, M.D., Brockton, Mass., to Miss Geneva A. Cobb of Providence, R. I., September 6.

Edward C. Koenig, M.D., North Tonawanda, N. Y., to Caroline M. Osborne, M.D., at Phelps, N. Y., August 30.

P. Elwood Stigers, M.D., Hancock, Md., to Miss C. Virginia Barker of West Virginia, at Ellicott City, Md., August 21.

Benjamin Trowbridge Tilton, M.D., New York City, to Miss Anna Billings Griggs of Tacoma, Wash., September 14.

Patience S. Bordeau, M.D., Grand Rapids, Mich., and Henry N. Fisco of New York City, at Grand Rapids, September 6.

Clarence Philip Obenschain, M.D., Kerr's Creek, Va., to Miss Alice Virginia Kirkpatrick at Alone, Va., September 6.

Perry J. Payne, M.D., Jamestown, Pa., to Miss Jean L. Veach of New Castle, Pa., at Chautauqua, N. Y., August 30.

Neil Campbell Monroe, M.D., Rogers City, Mich., to Miss Bessie Kennedy Whiteley of Millersburg, Mich., September 6.

Arthur Preston Clark, M.D., New Hartford, N. Y., to Miss Mabel Angeline Robinson of Watertown, N. Y., August 30.

Blanche Rosalie Slaughter, M.D., Washington, D. C., and Mr. Baxter Morton of New York City, at Lynchburg, Va., September 6.

J. Scott McLeod, M.D., Boston, Mass., to Miss Minnie M. Detterick of Las Vegas, New Mexico, at New York City, September 9.

Deaths

Ephraim J. McCallum, M.D. Jefferson Medical College, Philadelphia, 1853, the oldest practitioner of Seneca County, Ohio, for many years a member of the American Medical Association and the Ohio State Medical Association; an honorary member of the Northwestern Ohio and Seneca County medical societies, beloved and esteemed by all, died at his home in Tiffin, Ohio, September 7, from heart disease, after an illness of four days, aged 85. A year ago the entire medical fraternity of the county celebrated the golden anniversary of Dr. McCallum's entry into practice and presented him with a silver loving-cup.

Milton H. Hardy, M.D. New York University, New York City, 1887, a member of the *American Medical Association*, and of the Salt Lake County *Medical Society*; *superintendent* of the State Mental Hospital, Provo, Utah, from 1896 to June, 1905; a prominent Mormon alienist; formerly superintendent of schools of Utah County, and later territorial superintendent of schools, died at his home in Provo August 23 from valvular heart disease, after a long illness, aged 60.

Siegfried Martus, M.D. New York University, New York City, 1889, New York City, member of New York County Medical Society, New York County Medical Association, Harlem Medical Association, German Medical Society, for fourteen years on the staff of Mt. Sinai Hospital, and medical adviser of the Hebrew Technical Institute, died at New York Hospital a short time after an operation for appendicitis, August 31, aged 43.

John Milton Davies, M.D. Penn Medical University, Philadelphia, 1854, said to have been the oldest practitioner in western Pennsylvania, an assistant surgeon and surgeon of the Ninth New Jersey Volunteer Infantry, post surgeon at Newberne, N. C., and acting mayor of that city during the Civil War, city physician of Erie, Pa., in 1872 and 1873, died at his home in Warren, Pa., September 5, from senile debility, aged 77.

Simon Mower Whistler, M.D. Department of Medicine of the University of Pennsylvania, Philadelphia, 1866, acting assistant surgeon in the Army during the Civil War; a member of the Medical Society of the State of Pennsylvania, died at his home in Harrisburg, August 17, *after an illness of six* weeks, aged 63.

***Jacob S. Ammon*, M.D.** Department of Medicine of the University of Pennsylvania, Philadelphia, 1868, *sometime* vice-president of the Banks County Medical Society; surgeon during the Civil War, died at his home in Reading, Pa., September 5, after an illness of more than a year, aged 68.

William M. Late, M.D. Department of Medicine of the University of Pennsylvania, Philadelphia, 1855, of Bridgeport, Harrison County, W. Va., died at the home of his daughter in Bordentown, N. J., September 5, after an illness of two weeks, aged 72.

Samuel H. Fee, M.D. Faculty of Medicine of Queen's University, Kingston, Ont., 1862; health officer of Kingston; formerly in the United States Army, and an alderman of Kingston, shot himself while suffering from melancholia August 31, aged 65.

Frederick William Billart, M.D. (Years of Practice) Indiana, 1897, for more than half a century a practitioner of Indiana, died from intestinal obstruction at his home in Chrisney, Ind., September 4, after an illness of two days, aged 73.

Joseph H. Green, M.D. Medical Department of the University of Cincinnati, 1860, one of the oldest practitioners of Miami County, Ohio; a surgeon in the Civil War, died at his home in Troy, September 6, aged 72.

George E. Carey, M.D. Medical Department of Western Reserve University, Cleveland, Ohio, 1885, of Salina, Pa., died at the home of his mother in Maple Shade, Pa., August 26, after an illness of four years, aged 47.

David Arthur Titus, M.D. Michigan College of Medicine and Surgery, Detroit, 1892, of Detroit, Mich., died at Port Arthur, Mich., August 15, from brain abscess following typhoid fever, after a short illness, aged 35.

James K. Castles, M.D. Memphis (Tenn.) Hospital College, 1900, assistant physician at the Shelby County Poor and Insane Asylum, died at his home in the First Civil District of Shelby County, August 15.

Henry Utley, M.D. New York University, New York City, 1899, surgeon of the Seventy-fifth Illinois Volunteer Infantry during the Civil War, died at the home of his son in Sterling, Ill., April 27, aged 82.

Charles Edwin Parker, M.D. University of Vermont Medical Department, Burlington, 1889, member of the Massachusetts Medical Society, died in Princeton, Mass., July 10, from carcinoma, aged 41.

Neal Hardy, M.D. University of Wooster Medical Department, Cleveland, Ohio, 1873, of Canton, Ohio, died suddenly at Hicksville, Ohio, August 28, from heart disease, aged 58.

William W. Bass, M.D. Berkshire Medical College, Pittsfield, Mass., 1835, surgeon during the Civil War, died at his home in Dorchester, Boston, July 21, after a long illness, aged 95.

William B. Cooper, M.D. Medical College of Ohio, Cincinnati, 1860, died at his home in Kokomo, Ind., from acute nephritis, September 6, after an illness of only two days, aged 70.

John D. Finnegan, M.D. University of Vermont Medical Department, Burlington, 1893, formerly of Ogdensburg, N. Y., died at his home in Moira, N. Y., August 26, aged 48.

John S. Curtis, M.D. Medical College of Ohio, Cincinnati, 1878, of Washington Court House, Ohio, died near Sedalia, Ohio, August 20, from heart disease, aged 55.

George W. Duncan, M.D. University of Louisville Medical Department, died from cancer of the face at his home in Franklin, Ky., September 8, aged 80 years.

John B. Gilman, M.D. University of Vermont Medical Department, Burlington, 1884, died at his home in West Pawlet, Vt., September 1, after a short illness.

Samuel T. Dickinson, M.D. Jefferson Medical College, Philadelphia, 1849, died at his home near Milford, Va., September 5, after a lingering illness, aged 76.

William E. Tarbell, M.D. Medical School of Maine at Bowdoin College, Brunswick, 1868, died at his home in Athens, Maine, August 18, aged about 60.

E. H. Yancey, M.D. Macon, Ga., 1869, surgeon in the Confederate service during the Civil War, died at his home in Covington, Ga., July 1, aged 70.

***Horatio Woodbury*, M.D.** *Medical School of Maine at Bowdoin* College, Brunswick, 1882, died at his home in South Paris, Maine, July 9.

George Rice, M.D. *Medical Institution of Yale College*, New Haven, Conn., died at his home in South Framingham, Mass., April 18, aged 67.

Clement F. Ellerbrock, M.D. Baltimore Medical College, 1900, died at Deming, N. M., from tuberculosis September 2, aged 27.

Charles F. Dilley, M.D. Rush Medical College, Chicago, 1863, died at his home in Spickard, Mo., September 3, aged about 75.

George Henry, M.D. Long Island College Hospital, Brooklyn, 1860, died in Denver, Colo., April 23 from heart disease.

James A. Francisco, M.D. (Examination, Ohio), died recently at his home in Port Clinton, Ohio.

***Carolyn Dewey Beebe*, M.D.** Colorado, 1903, *died in Denver*, Colo., March 13, aged 39.

Queries and Minor Notes

Anonymous Communications will not be noticed. Queries for this column must be accompanied by the writer's name and address, but the request of the writer not to publish name or address will be faithfully observed.

THE USE OF CARBOLIZED SPONGE TENTS.

Grand Rapids, Mich., July 25, 1905.

To the Editor:—If at all, in what uterine derangements would you consider it legitimate and good treatment, to use carbolized sponge tents? A. B.

Answer.—The ease with which the aseptic dilator may be substituted for any legitimate purpose for which the sponge tent was formerly used makes the use of the latter no longer justifiable or desirable. Many prominent gynecologists and obstetricians never employ them. The writer of a well-known textbook on gynecology says: "I would limit their employment altogether to obstetric cases," while an examination of a number of recent authoritative text-books on obstetrics reveals no mention of sponge tents. Lest a biased opinion be given the dealers in surgical supplies were consulted and asked: "How often do you have a call for sponge tents?"

No. 1: "Almost every day."

No. 2: "We almost never have a call for sponge tents."

No. 3: "Frequently."

"Who is ordering them, city obstetricians and gynecologists or country practitioners?"

No. 1: "I might say neither; the call comes almost entirely from midwives. Some buy from four to six dozen at a time."

No. 2 said he had no midwife practice.

No. 3: "Our call comes almost entirely from the country."

The reader may judge for himself the use to which these articles are put. No efforts were made in any case to have the tents kept surgically clean.

An aseptic non-dilatable smooth foreign body may do damage if left in the uterus, a rough dilatable sponge tent whose fingers will insinuate themselves into the endometrium will do much more harm, and such a structure, septic as a sponge tent must always be considered, has dangers in its use beyond our power to estimate. It should be considered a relic of bygone days and important only in the history of the pre-aseptic period.

BOOKS ON MICROSCOPIC DIAGNOSIS.

Sylacauga, Ala., Sept. 7, 1905.

To the Editor:—Will you kindly advise me as to the best textbook or compend suited to the use of a busy country doctor who has to do most of his own microscopy. I want a good, practical, abridged text giving each step in the technic clearly and concisely. H. L. Castleman.

Answer.—Cabot's "Clinical Examination of the Blood" ($3.50, Wm. Wood & Co., New York) is excellent on the blood, and so is Ogden's "Clinical Examination of the Urine" ($3.00, W. B. Saunders & Co., Philadelphia), on the urine. Von Jaksch's "Clinical Diagnosis" ($6.50, J. B. Lippincott & Co., Philadelphia) is the most complete book on the whole subject, but is probably too technical. Simon's "Manual of Clinical Diagnosis" ($4.00, Lea Brothers & Co., Philadelphia) is probably best adapted to our correspondent's needs.

State Boards of Registration

COMING EXAMINATIONS.

Central District Indian Territory Board of Medical Examiners, South McAlester, October 2. Secretary, W. B. Caldwell, Hugo.

Utah State Board of Medical Examiners, Salt Lake City, October 2. Secretary, R. W. Fisher, Salt Lake City.

Board of Medical Examiners of Arizona, Phoenix, October 2-3. Secretary, A. Martin, Phoenix.

Idaho State Board of Medical Examiners, Boise, October 3. Secretary, J. L. Conant, Jr., Genesee.

Indiana Board Medical Registration and Examination, State House, Indianapolis, October 3. Secretary, W. T. Gott, Crawfordsville.

Board of Medical Examiners of Montana, The Capitol, Helena, October 3. Secretary, W. C. Riddell, Helena.

North Dakota State Medical Examining Board, Grand Forks, October 3. Secretary, H. M. Wheeler, Grand Forks.

Minnesota State Board of Medical Examiners, Old Capitol Building, St. Paul, October 3-5. Secretary, C. J. Ringnell, Minneapolis.

Rhode Island State Board of Health, State House, Providence, October 5-6. Secretary, G. T. Swarts, Providence.

Regular Board of Medical Examiners of Georgia, The Capitol, Atlanta, October 9. Secretary, F. D. Paterson, Cuthbert.

Michigan State Board of Registration in Medicine, Capitol Building, Lansing, October 10. Secretary, B. D. Harison, Sault Ste. Marie.

State Medical Board of the Arkansas Medical Society, Little Rock, October 10. Secretary, J. P. Runyan, Little Rock.

State Board of Medical Registration of Vermont, Y. M. C. A. Hall, Burlington, October 10-12. Secretary, W. S. Naya, Underhill.

Kansas State Board of Medical Registration and Examination, State House, Topeka, October 10-11. Secretary, G. F. Johnston, Lakin.

Board of Medical Supervisors of Washington, D. C., Washington, D. C., October 12. Secretary, W. C. Woodward, Washington, D. C.

Board of Medical Examiners of State of Texas, San Antonio, October 17. Secretary, T. T. Jackson, San Antonio.

State Board of Medical Examiners of New Jersey, Trenton, October 17-18. Secretary, E. L. B. Godfrey, Camden.

State Board of Health of Illinois, The Great Northern Hotel, Chicago, October 18. Secretary, J. A. Egan, Springfield.

Louisiana State Board, New Orleans, October 20-21. Secretary, F. A. Larue, New Orleans.

Washington July Report.—Dr. C. W. Sharples, secretary of the Washington State Medical Examining Board, reports the written examination held at Seattle, July 5-7, 1905. The number of subjects examined in was 17; total number of questions asked, 100; percentage required to pass, 75, and 70 in case of applicants who graduated ten years previous. The total number of candidates examined was 94, of whom 77 passed and 17 failed. The following colleges were represented:

PASSED.

College.	Year Grad.	Per Cent.
Rush Med. Coll. (1885) 87.5; (1900) 76.5; (1902) 87, 89.2; (1903) 77, 81.8, 84.6; (1904) 89.7; (1905) 90.7.		
Keokuk Med. Coll. of P. and S.	(1905)	83
Harvard University....(1902) 88.8; (1904) 86;	(1905)	83
Bennett Med. Coll., Chicago.......(1893) 78.6;	(1905)	84.3
Med. Coll. of Virginia	(1896)	87
University of Virginia	(1905)	76.4
[illegible] ....(1904) 80;	(1905)	81
[illegible]	(1901)	76.4
[illegible]	(1882)	77.2
[illegible] (1895) 78.4; (1897) 80.1;	(1900)	75.3
[illegible] *ed. Dept.*	(1904)	89
[illegible] (1893) 74.2; (1896) 82; (1900) 79.5; [illegible] 81.7.		
Medico-Chirurgical Coll., Kansas City	(1905)	75
College of P. and S., St. Louis	(1895)	71.5
St. Louis University................(1904) 78;	(1905)	77.1
University of Minnesota (1892) *80.7*; *(1897) 82.2*; *(1903)* 80.1; (1904) 90; (1905) 85.5.		
[illegible] Medical Coll. of Indianapolis	(1893)	70
[illegible] go (1902) 75; (1904) 85;	*(1905)*	78.5, 82
[illegible] ....(1904) 84;	(1905)	82.1, 84.1, 86
[illegible] ....(1897) 80.1;	(1900)	75.5
[illegible] ....(1902) 83;	(1904)	92
[illegible] hicago....(1898) 84.7;	*(1904)*	*87*
[illegible] (1899) 76.6; (1901) 93; (1902) 83.4;		
University of Leipzig	(1892)	90
University of *California*	(1904)	83
Bellevue Med. Coll	(1890)	70.5
Ensworth Med. Coll	(1904)	77.5
University of Pennsylvania	(1902)	83.5
Medical Coll. of Indiana	(1903)	76.8
Johns Hopkins University	(1902)	86.1
University of Southern *California*	(1903)	75
Trinity Med. Coll	(1900)	81
Tokio Med. Coll	(1896)	*81.4*
University of Oregon	(1905)	78, 90
Detroit Coll. of Medicine..............(1895) 88.7;	(1898)	76.2
College of P. and S., San Francisco	(1905)	78
McGill University	(1899)	89
Sioux City Med. Coll	(1901)	82.5
Columbia University	(1886)	91.3
Kentucky School of Med	(1903)	78.5

Washington (D. C.) July Report.—Dr. William C. Woodward, secretary of the Board of Medical Supervisors of the District of Columbia, reports the *oral* and written examination held at Washington, D. C., *July 13, 1905*. The number of subjects examined in was 17; the total number of questions asked, 80; percentage required to pass, 75. Forty candidates were examined, of whom 31 passed and 9 failed. Representatives of the following colleges passed:

PASSED.

College.	Year Grad.	Per Cent.
*Columb[illegible]	(1904)	90.87, 85.56
Georgeto[illegible]	(1905)	93.96, 84.46
George [illegible]	(1905)	90.18, 86.12, 84.75, 79.40, 78.5[illegible] *81.09*, 88.06, 91.16, 80.56, 75.56, 85.2[illegible] 86.37, 79.06, 91.56, 92.31, 85.03, 76.31, 84.15.
Hahnemann Medical College, *Philadelphia*	(1905)	*90.59*
Howard University	(1905)	75.34, 81.75

*Now the George Washington University.

Wisconsin July Report.—Dr. J. V. Stevens, secretary of the Wisconsin Board of Medical Examiners, reports the written examination held at Madison *July 11-13, 1905*. The number of subjects examined in was 13; total number of questions asked, 130; percentage required to *pass, 75*. The total number of candidates examined was 81, including one osteopath. Of these 71 passed. Representatives of the following colleges passed:

PASSED.

College.	Year Grad.	Per Cent.
College of P. and S., Chicago	(1905)	80.3, 80.8, 81.7, 81.8, 82.4, 83, 83, 83.2, 84, 84.7, 84.8, 85, 86.2, 88.2, 91.4
College of P. & S., Milwaukee	(1905)	78.8, 79.3, 81, 82.3, 82.5, 82.7, 83.2, 83.8, 84.3, 84.6, 86
Rush Med. Coll.		75.8, 79.9, 81.7, 83.6, 84.4, 85.1
Northwestern University, Chicago,		80.3, 81.3, 81.7, 82.5, 82.6, 83.8, 84, 84.5, 85.8, 86.4, 86.7, 88.7
Milwaukee Med. Coll.	(1905)	75, 75.2, 76.5, 77.5, 78.9, 81, 81.6, 82, 83.9, 84, 85.1, 85.3, 86.2, 86.5, 87, 87.8, 88.5.
Johns Hopkins University	(1904 88.1, (1905)	86.2
University of Michigan Med. Dept.	(1904)	88.1
University of Michigan Med. Dept. (Homeo.)	(1904)	83
Queen's Med. Coll., Canada	(1904)	86.7
University of Minnesota	(1905)	83.5
American Med. Miss. Coll., Chicago	(1904)	85
Washington University, St. Louis	(1905)	82
National Med. Coll., Chicago	(1899)	84.9
Howard Med. Coll.	(1904)	82.4

The Public Service

Army Changes.

Memorandum of changes of stations and duties of medical officers, U. S. Army, week ending September 9:

Krebs, Lloyd LeR., asst.-surgeon, ordered to duty with 1st battalion Field Artillery from Presidio of San Francisco to Camp of Instruction at the Henry Ranch, San Luis, Obispo County, Cal.

Moseley, E. B., deputy surgeon general, leave of absence extended thirty days.

Kieffer, Cl [illegible] months' leave of absence.

Asst. Surg [illegible] November 1), Lewis, Wm. F. (November [illegible] Decer [illegible] W. P. (Febru [illegible] Nove [illegible] (November 1 [illegible] 1), [illegible] ber 1), Coffi [illegible] Fife, [illegible] 1), Powell, [illegible] ourne, E. D. (November 1), and Grissing [illegible] re relieved from duty in the Philippines [illegible] the dates opposite their names, and [illegible] ble transport to San Francisco, and on arrival report by telegraph to the Military Secretary of the Army for further orders.

Asst. [illegible], Fort McDowell, Cal.; Ashburn, P. M., [illegible], Geo. P., General Hospital, Fort Bayard [illegible] L., Fort Warren, Mass.; Shepard, John L [illegible] Presidio of San Francisco; Jean, Geo. W [illegible] Jos. F., Fort Meade, S. D.; Van Dusen, [illegible]; Reilly, John J., Fort Slocum, N. Y.; [illegible] O. T., and Van Poole, G. McD., Fort S [illegible] m duty at the stations designated after t [illegible] eed to San Francisco, and take transport to sail about October 5 for Manila, P. I., where on arrival they will report in person to the commanding general Philippines Division for assignment to duty.

Gilchrist, H. L., asst.-surgeon, granted fifteen days' leave of absence.

Thornburgh, R. M., asst.-surgeon, granted thirty days' leave of absence.

Van Dusen, Jas. W., asst.- surgeon, left West Point, N. Y., on leave of absence to September 25.

Pomeroy, Wm. H., contract surgeon, returned to duty at Springfield Armory, Mass., from ten days' leave of absence.

Merrick, John N., contract surgeon, returned to Fort Missoula, Mont., from practice march with command, to Flathead Indian Reservation.

Foster, Douglas E., dental surgeon, left Fort Jay, N. Y., and arrived at his home, Warrensburg, Mo., for annulment of contract.

[illegible] dental surgeon, arrived at Vancouver Bar- [illegible] rom detached service at Fort Walla Walla, [illegible] Columbus, Washington.

[illegible] contract surgeon, returned to duty at Fort [illegible] leave of absence.

White, J. S., contract surgeon, left Fort Snelling, Minnesota, on detached service with 7th Battalion, Field Artillery, en route to target range near Sparta, Wis.

Wertenbaker, C. I., contract surgeon, returned to duty at Madison Barracks, N. Y., from practice march to Ogdensburg, N. Y., with 3d Battalion, 23d Infantry.

Whitney, W., contract surgeon, arrived at Columbus Barracks, Ohio, for duty, from detached service with detachment of recruits en route to Fort McDowell, Cal.

Byars, Caspar R., contract surgeon, will proceed to Camp J. P. Story, Fort Sill, O. T., for duty, and on the breaking up of 2d Prov. Regiment, Field Artillery, will accompany 2d Battalion Field Artillery to his station, Fort Sam Houston, Texas.

Lauderdale, C. E., dental surgeon, leave of absence extended one month.

Waddell, R. W., dental surgeon, left Fort Leavenworth, Kans., for Fort D. A. Russell, Wyo., for duty.

Whinnery, Jean C., dental surgeon, reported at Fort St. Michael, Alaska, for duty.

Lemmon, Robert, contract surgeon, returned to duty at Fort McKinley, Me., from leave of absence.

Branch, F. D., contract surgeon, granted leave of absence for fourteen days.

Navy Changes.

Changes in the Medical Corps U. S. Navy, for the week ending September 9:

Crunwell, A. G., surgeon, detached from the Naval Hospital, New York, N. Y., and ordered to the *Wolverine.*

Richards, T. W., surgeon, detached from the *Arkansas*, and ordered to the Naval Recruiting Station, Baltimore.

Wright, B. L., P. A. surgeon, ordered to the *Arkansas.*

McClanahan, R. K., asst.-surgeon, detached from the Naval Recruiting Station, Baltimore, September 5, and ordered to Washington, D. C., September 6, for examination for promotion, and then to wait orders.

Lando, M. E., asst.-surgeon, detached from the Naval Hospital, Mare Island, Cal., and ordered to the Naval Medical School, Washington, D. C.

DeValin, H., acting asst.-surgeon, detached from the *Wolverine* and ordered home to wait orders.

DeLancy, C. H., P. A. surgeon, ordered to the *Paducah.*

Butler, C. St. J., P. A. surgeon, detached from the *Castine* when placed out of commission and ordered to the Naval Hospital, San Juan, P. R.

Page, J. E., P. A. surgeon, detached from the *Lancaster* and ordered home to wait orders.

Bachmann, R. A. Y., P. A. surgeon, ordered to the *Lancaster.*

Baker, M. W., asst.-surgeon, detached from the Naval Station, San Juan, P. R., and ordered home to wait orders.

Public Health and Marine-Hospital Service.

List of changes of station and duties of commissioned and noncommissioned officers of the Public Health and Marine-Hospital Service for the fourteen days ending September 6:

Sawtelle, H. W., surgeon, to proceed to Richmond, Va., for special temporary duty.

Magruder, G. M., surgeon, granted leave of absence for one month, from August 26, on account of sickness.

Gardner, C. H., P. A. surgeon, to proceed to New Orleans, La., and report to Surgeon J. H. White for special temporary duty.

Foster, M. H., P. A. surgeon, to proceed to Galveston, Tex., and assume temporary command of the service.

Stiles, Ch. W., chief Division of Zoology, granted leave of absence for 12 days from August 14.

Hunt, Reid, chief Division of Pharmacology, granted leave of absence for 10 days from August 21.

Hunt, Reid, chief Division of Pharmacology, to represent service at meeting of American Pharmaceutical Association at Atlantic City, N. J., September 4 to 9.

Richard, N. D., acting assistant-surgeon, granted leave of absence for 7 days from August 17, under the provisions of paragraph 210 of the regulations.

Stevenson, J. W., acting asst.-surgeon, to report at Washington, D. C., for special temporary duty.

Thompson, C. V., acting asst.-surgeon, granted leave of absence for 16 days from September 2.

Richardson, S. W., Pharmacist, to report at Washington, D. C., for special temporary duty.

McKay, M., pharmacist, relieved from duty at Boston, Mass., and directed to proceed to Cincinnati, Ohio, and report to acting assistant surgeon in charge for duty and assignment to quarters.

Woods, C. H., [illegible] ved from duty at Cincinnati, Ohio, to [illegible] and report to medical officer in comma [illegible] to quarters, relieving Pharmacist G. I. [illegible]

Carlton, C. G., pharmacist, granted leave of absence for 7 days, from August 22, under the provision of paragraph 210 of the regulations.

Van Ness, G. I., Jr., pharmacist, on being relieved from duty at Evansville, Ind., by Pharmacist C. H. Woods, to report at Washington, D. C., for duty.

Vaughan, G. T., asst. surgeon-general, and Austin, H. W., surgeon, [illegible] ice at meeting of the Association of mili- [illegible] September 26-29.

[illegible] geon, to proceed to Guthrie, Okla., for [illegible]

[illegible], to report at Bureau, Washington, D. C., for special temporary duty.

Irwin, Fairfax, surgeon, to proceed to New York for special temporary duty, on completion of which to rejoin station at Philadelphia, Pa.

Banks, C. E., surgeon, to proceed to Jacksonville, Fla., for special temporary duty.

Williams, L. L., surgeon, to inspect the quarantine station at the Port of Baltimore, Md.

Woodward, R. M., surgeon, detailed to represent service at the meeting of the American Public Health Association at Boston, September 25-29, 1905.

Stoner, J. B., surgeon, granted two days' leave of absence from August 27.

Lavinder, P. A. surgeon, relieved from duty at New Orleans and directed to proceed to Natchez for special temporary duty, relieving P. A. Surgeon Goldberger.

Goldberger, Joseph, P. A. surgeon, to proceed to Memphis, Tenn., for special temporary duty.

Goldberger, Joseph, P. A. surgeon, to proceed to Bainbridge, Ga., for special temporary duty.

Trotter, F. E., P. A. surgeon, to proceed to Victoria, B. C., for special temporary duty.

[illegible] surgeon, relieved from duty in office of [illegible] ly, and assigned in office of American [illegible] y.

[illegible] to proceed from Naples, Italy, to Trieste for special temporary duty.

Ashford, F. A., asst.-surgeon, relieved from duty at Ellis Island and directed to proceed to New Orleans, La., *and to report to* Surgeon J. H. White for special temporary duty.

Roehrig, A. M., pharmacist, to represent the service at meeting of the American Pharmaceutical Association at Atlantic City, N. J., September 4-9.

Richardson, S. W., pharmacist, to proceed to New Orleans and report to Surgeon J. H. White for special temporary duty.

APPOINTMENTS.

Dr. Marshall C. Guthrie of North Carolina, commissioned as assistant surgeon, Public Health and Marine-Hospital Service.

Health Reports.

The following cases of smallpox, yellow fever, cholera and plague have been reported to the Surgeon General, Public Health and Marine-Hospital Service, during the period from August 19 to September 8:

SMALLPOX—UNITED STATES.

Louisiana: New Orleans, August 19-26, 1 case.
Michigan: Grand Rapids, August 19-26, 2 cases.

Ohio: Toledo, August 12-19, 1 case.
Tennessee: Memphis, August 19-26, 2 cases.
Wisconsin: Appleton, August 19-26, 2 cases.

SMALLPOX—INSULAR.

Philippine Islands: Manila, July 1-8, 1 case.

SMALLPOX—FOREIGN.

Brazil: Bahia, July 29-August 5, 1 death; Rio de Janeiro, July 23-August 6, 18 cases, 5 deaths.
Chile: Valparaiso, to August 9, 3,553 cases, 836 deaths.
China: Niuchwang, July 22, 1 case.
France: Lyon, August 5-12, 1 death; Paris, August 5-19, 76 cases, 11 deaths.
Great Britain: Cardiff, Aug. 12-19, 1 case; Liverpool, 1 case; London, July 29-Aug. 5, 3 cases.
India: Bombay, July 25-August 8, 6 deaths; Calcutta, July 22-29, 3 deaths; Madras, July 22-28, 3 deaths.
Italy: Catania, August 17-24, 1 death.
Russia: Moscow, July 22-August 12, 13 cases, 6 deaths; Odessa, August 5-19, 11 cases, 3 deaths; St. Petersburg, July 29-August 5, 3 cases 1 death.
Spain: Barcelona, August 10-20, 1 death.

YELLOW FEVER—UNITED STATES.

Florida: Pensacola, August 29, 3 cases.
Georgia: Atlanta, September 2, 1 case, imported.
Indian Territory: Mayville, September 1, 1 case, doubtful.
Louisiana: Acadia Parish, to August 17, 1 case; Ascension Parish, August 14-September 3, 21 cases; Assumption Parish, August 26-September 3, 6 cases; East Carroll Parish, August 14-September 4, 36 cases, 1 death; Iberville Parish, to August 31, 15 cases, 5 deaths; Jefferson Parish, to September 3, 149 cases, 14 deaths; Lafayette Parish, August 15-September 4, 2 cases; Lafourche Parish, to September 3, 331 cases, 31 deaths; Madison Parish, August 14-September 4, 9 cases; Orleans Parish, July 21-September 4, 2,075 cases, 292 deaths; Plaquemines Parish, to September 3, 23 cases, 2 deaths; Rapides Parish, August 15-September 3, 7 cases; St. Bernard Parish, to Sept. 3, 7 cases, 1 death; St. Charles Parish, 73 cases, 6 deaths; St. James Parish, 4 cases; St. John the Baptist Parish, 55 cases, 7 deaths; St. Mary Parish, 342 cases, 9 deaths; St. Tammany Parish, to August 22, 2 cases; Terrebonne Parish, to September 3, 66 cases, 3 deaths.
Mississippi: Gu[illegible] 22-August 19, 53 cases, 1 death, on vessel; [illegible] 8, 1 case, diagnosis proved not yellow fever; [illegible] 1 case; Mississippi City, August 22-September 4, 31 cases; Natchez, to August 30, 15 cases; North Gulfport, August 15-September 4, 32 cases; Pearlington, September 1, 2 cases; Vicksburg, August 30, 2 cases.
New York: New York Quarantine, August 1-12, 1 death, from S. S. *Advance*, from Colon.

YELLOW FEVER—FOREIGN.

Brazil: Rio de Janeiro, July 22-August 5, 16 cases, 6 deaths.
Mexico: Tezonapa, Aug. 20-26, 3 cases; Tierra Blanca, August 13-26, 1 case, 2 deaths; Vera Cruz, 5 cases.
Nicaragua: Leon, August 8, present; Managua, present.
Peru: Lima, August 12, 1 case, imported.
Panama: Bocas del Toro: August 11-18, 1 case; Colon, July 31-August 12, 6 cases, 2 deaths; Panama, 8 cases, 1 death.

CHOLERA—INSULAR.

Philippine Islands: Manila, August 26, present.

CHOLERA—FOREIGN.

Germany: Hamburg, August 29-September 5, 2 cases, 1 death, first case imported.
India: Bombay, July 25-August 8, 2 deaths; Calcutta, July 22-29, 26 deaths; Madras, July 22-28, 145 deaths.

PLAGUE—INSULAR.

Hawaii: Waipahu, August 30, 1 death.
Philippine Islands: Manila, July 1-8, 3 cases, 2 deaths.

PLAGUE—FOREIGN.

Argentina: Santiago del Estero, July 20, recrudescence.
Australia: Queensland: Cairns, July 8, 1 case; Ipswich, July 5, 1 case, 1 death; New South Wales: Sydney, July 1-8, 1 case.
Brazil: Rio de Janeiro, July 22-August 5, 4 cases, 2 deaths.
China: Mukden district, July 22, reported.
Egypt: General, July 8-15, 11 cases, 10 deaths.
India: General, June 24-July 8, 4,338 cases, 3,943 deaths; Bombay, July 25-August 8, 102 deaths; Calcutta, July 22-29, 8 deaths; Madras, July 22-28, 1 death.
Japan: Chiba Ken, July 20, 1 death.
Panama: La Roca, August 26, 1 death.
Peru: Lima, July 10-20, 2 cases, 2 deaths.
Siam: Bankok, July 1, present.
Turkey: Beirut, July 17, 1 case, imported.

Coming Society Meetings

American Electro-Therapeutic Association, New York City, September 19-21.

American Association of Obstetricians and Gynecologists, New York City, September 19-25.

American Public Health Association, Boston, September 25-29.

Medical Society of the State of Pennsylvania, Scranton, September 26-28.

Association of Military Surgeons of the United States, Detroit, September 26-28.

Wyoming State Medical Society, Cheyenne, September 27-28.

American Roentgen Ray Society, Baltimore, September 28-30.

Mississippi Valley Medical Association, Indianapolis, October 10-12.

New York State Medical Association, New York City, October 16 19.

American Academy of Medicine, Chicago, November 7-8.

American Dermatologic Association, New York City, December 28-30.

Therapeutics

[It is the aim of this department to aid the general practitioner by giving practical prescriptions and, in brief, methods of treatment for the diseases seen especially in every-day practice. Proper inquiries concerning general formulae and outlines of treatment are answered in these columns.]

Chronic Nephritis.

Damage done to a kidney can not be repaired is the basis on which Dr. A. C. Morgan, in *Med.-Chir. Jour.*, places his treatment toward prohibiting any advance of pathologic process. The complications which may arise in the course of a chronic interstitial nephritis are the chief causes of death, such as pneumonia, la grippe, cerebral hemorrhage, cardiac dilatation, pericarditis and inflammation of other serous membranes.

Uremia arising in the course of nephritis is a sign of broken compensation of the kidney similar to an incompetent heart. So in the administration of diuretics the same rule should hold good as in the treatment of heart lesions, and these remedies should never be used until actually needed.

Hygienic measures should be enforced in the treatment of chronic nephritis. Flannels should be worn the year round in order to keep the skin active and steady and to protect the patient from sudden changes of weather. If possible, a warm equable climate should be sought in the winter time. Social life should be abandoned and irregular hours of sleep avoided. Cold baths should be prohibited in order to avoid throwing too much work on the kidneys. Hot baths are of value in order to promote skin elimination and thus to relieve the kidneys. Baths may be given in the form of warm packs, Turkish baths, vapor or hot-water baths. Massage is of value when the patient is confined to bed for any reason. Rest in bed is recommended when the albumin is severe or persistent, or when the heart shows signs of weakness, and the patient should be required to remain in bed for ten hours out of the twenty-four to relieve the heart's action and to diminish the general activity. A large amount of water is required to replace the excessive excretion of water and to keep the solids in solution, avoiding, however, excess in this treatment, as the tension may be increased by the ingestion of too much water. Three quarts of water a day is said to be a proper amount. The carbonated waters are recommended to counteract the high acidity of the urine which is usually present. According to Millard, malt liquors are bad, spirits are worse and acid wines are the least harmful.

DIET.

As to diet, the nitrogenous foods must be decreased considerably, as they increase the secretion of urea. However, the diet must not be too much restricted, as the patient's strength must always be maintained. Coffee and tea must be used sparingly and milk used to a marked extent. Meat and gravies must be restricted; oysters may be eaten freely.

SYSTEMIC TREATMENT.

The object to be kept in mind is to inhibit or to arrest the sclerotic and degenerative changes and to overcome the anemia. Potassium iodid, hydriodic acid and mercuric chlorid are the preparations to be used in combating the first conditions, and arsenic and iron to correct the anemia. Iron is an astringent and a tonic, but must not be used, according to this writer, in too large doses, as excessive doses disturb the secretions and lead up to dangers of uremia.

If the conditions are such as to require a decrease in the arterial tension, such as flushing of the face, congestive headaches, vertigo and epistaxis, and if the heart is in good condition, veratrum viride or aconite is recommended over long periods, and glonoin is of service if the heart is weak. A low tensional pulse predisposes to serous effusions and a decrease in the daily elimination from the kidney, thus increasing the dangers of uremia, and this must be overcome. In such conditions digitalis combined with nitroglycerin is recommended.

Whether the fluid in the cavities be an exudate or a transudate it should be disposed of as rapidly as possible. If a transudate is present, increase the tension; if an exudate, absorptives or local applications are of service. If necessary the cavity may be tapped and an adrenalin solution injected which, the author states, prevents further accumulation of the fluid.

Saline cathartics are valuable in getting rid of fluid by absorption.

Counterirritation is of service in the parenchymatous form in which a marked congestion of the kidney is present. Dry or wet cupping over the kidney often relieves the congestion and improves diuresis.

Drowsiness is to be overcome by decreasing and restricting the solid diet, by increasing the fluids and elimination by means of purging, of sweating rather than by diuretics, which may be required later in the course of the disease.

Slight edema may be overcome by bandaging the limbs, rest in bed late in the morning, or rest in the middle of the day. If the edema still progresses other eliminants and diuretics must be employed, and if the limbs become large and the skin tense the skin may be punctured in many places and thus the fluid allowed to escape; in some cases the Southey tubes may be inserted. Erysipelas may be avoided in such procedures by careful attention to asepsis in the dressings.

Persistent vomiting or diarrhea are symptoms of toxemia. The former is relieved by washing out the stomach and the latter by diaphoresis and diuresis, but it should not be checked entirely, as it may bring on uremia.

Pruritus is due ordinarily to urea crystals irritating the skin. Hot baths followed by a 4 per cent. carbolic acid solution applied localy, or the infusion of conium leaves or chloral internally relieve the condition.

UREMIA.

When uremia develops, showing the failure in compensation of the kidney, venesection is indicated to rapidly eliminate the toxins, followed by an injection of the normal salt solution. When convulsions occur such preparations as caffein, scoparius, digitalis and convallaria are useful. If the heart is well compensated and does not enter into the cause of dropsy, the potassium salts, scilla and sweet spirits of niter are recommended to aid the function of the kidney. Asthma is frequently a symptom denoting the presence of a toxemia and disappears with the improvement, by eliminants, of the heart and kidney. Sometimes it is necessary to resort to chloral or morphin hypodermically in small doses, or perhaps to venesection.

Epistaxis sometimes occurs and indicates the necessity of lowering blood pressure.

Diaphoretics are indicated very early in the treatment as promoters of elimination and thus relieving the work of the kidney. They should be employed regularly, depending chiefly on hot water or hot-air baths. As to the medicinal agents as diaphoretics, sweet spirit of niter and liquor ammonia acetatis are preferable, using pilocarpin in emergency cases. Diuretics are of value only when the compensation of the kidney has failed and the urine is scanty and dropsy present. When indicated by poor heart's action and also to assist the kidney, the author recommends a hypodermic injection of morphin, followed the next morning by a hypodermic injection of pilocarpin. The author states that he has never seen any ill-effects follow the use of morphin when given in this way. The operation for stripping off the capsule of the kidney was not discussed by this writer.

Acute Nephritis.

Yeo recommends the following combinations in the treatment of acute Bright's disease:

℞.	Infusi jaborandi (1-45)	℥vi	180
	Syrupi aurantii	ʒv	20

M. Sig.: One tablespoonful every hour or two.

To relieve the anasarca in acute Bright's disease after the early acute symptoms have subsided, the following is recommended:

℞.	Tinct. ferri chloridi	ʒvi	24
	Liq. ammon. acetatis	℥iii	90
	Aquæ chloroformi	℥vi	180

M. Sig.: One tablespoonful in a wineglassful of water every four hours.

As a diuretic in acute Bright's disease he recommends the following:

℞.	Potass. citratis	℥ss	15
	Infusi digitalis	℥ii	60

M. Ft. mistura. Sig.: Two teaspoonfuls in aërated water every three hours.

In the chronic form the following combination is recommended as a diuretic:

℞.	Tinct. digitalis	℥ss	15
	Vini scillæ	℥iss	45
	Spts. etheris nitrosi	℥ii	60

M. Sig.: One teaspoonful in water every three or four hours.

For the general elimination the following is of value:

℞.	Potassii iodidi	gr. xv	1
	Sodii phosphatis	gr. xxx	2
	Sodii chloridi	gr. lxxv	5
	Aquæ q. s. ad	℥xx	600

M. Sig.: The entire amount to be taken in divided doses in the twenty-four hours.

As a tonic and diuretic the following is advised:

℞.	Tinct. ferri chloridi	℥ss	15
	Acidi acetici	ʒss	2
	Liq. ammon. acetatis	℥v	150
	Aquæ	℥ii	60

M. Sig.: One teaspoonful in water three times a day. Or:

℞.	Ferri sulph.		
	Sodii bicarb, āā	gr. lxxv	5
	Ext. taraxici	ʒi	4

M. Ft. pil. No. lx. Sig.: Take three pills night and morning.

As a hydrogogue cathartic the following is of value:

℞.	Potassii tartarati	ʒi-iss	4-6
	Pulv. jalapæ	gr. viii	5
	Pulv. cambogiæ	gr. i	06

M. Ft. chartula No. i. Sig.: To be taken at night and a similar dose the following morning.

To relieve the anasarca the following combination is also recommended by some authorities:

℞.	Potassii acetatis	ʒiiss	10
	Infusi digitalis		
	Infusi juniperi, āā	℥iii	90

M. Sig.: One tablespoonful every two to four hours.

Elaterin is a very efficient preparation to relieve the edema of the lower extremities and the abdominal ascites. It may be given in doses ranging from gr. 1/40 (.001) to gr. 1/20 (.003) and the dose repeated every two hours until a watery evacuation is produced.

Medicolegal

Rights Under Later, of Practitioner Under Former, Law.

The Supreme Court of Idaho holds (State vs. Cooper, 81 Pacific Reporter, 374), that under the provisions of section 5 of what is known as the "Medical Law of 1899," the Board of Medical Examiners are not empowered to call on applicants for a license for their diplomas, who were engaged in the practice of their profession under the law of 1887. Where it is shown that an applicant for a license to practice medicine and surgery was a resident of the state, engaged in the practice of his profession under the provisions of the law of 1887, and had complied with all the provisions of the law of 1899, the court holds that, in case the Board of Medical Examiners refused to issue his license, it was not criminal in him to pursue his profession. It was urged in this case by counsel for the state that the applicant should have resorted to his civil remedy by an appeal from the action of the Board of Medical Examiners to the district court, and there had the action of the board reviewed. It appeared that the board called on him for his medical diploma, which he sent to the board, who thereafter informed him that they did not and would not recognize the institution giving it as one having authority to issue a diploma to a doctor of medicine. The court says that when he received this notice he had the right to appeal from the action of the board, or he could treat their action as an infringement on his rights under the laws of 1887 and 1899. The statute of 1899 did not authorize the board to demand of him his diploma. He had furnished them all that they were entitled to under the law. They could not ignore the plain provisions of the 1899 law, and thereby make a criminal of a citizen of the state engaged in a legal and lawful business. If the Board of Medical Examiners could withhold a license from an applicant in this manner until he could appeal to the courts for redress, making a criminal of him every time he prescribed for or visited a patient, they could not only deprive him of valuable property rights, but ruin him in his profession, and brand him as a criminal. This is neither the spirit nor intent of the law.

Insanity and Expert Evidence.

The Supreme Judicial Court of Massachusetts says, in the homicide case of Commonwealth vs. Johnson, where the only defense offered was the insanity of the defendant at the time of the homicide, that on this issue it was competent for him to show that his ancestors or relatives had been insane, but the order in which the evidence should be introduced was wholly within the discretion of the trial court. A refusal to permit the cross-examination of the government experts on the relative value and reputation of medical authorities who had written on the general subject of insanity, as well as the exclusion of certain hypothetical questions addressed to them, were also discretionary. Nor is error found in the government having been allowed to question each of these experts as to whether he had formed any opinion, from his examinations and investigations and what he had heard in court, as to the mental condition of the defendant on date named, the physical and mental history of his family and himself, on which the questions were founded, having come solely from the defendant's statements, letters, and admissions or from his witnesses, and having been accepted as true, while it further appeared that each of the experts also had seen and examined him. Then, this question having been answered in the affirmative, and an opinion given that he was sane, followed by a similar reply to the further question, "What is your opinion of his sanity now?" the court says that if a question of this character, resting on the assumption of the truth of the evidence of a plaintiff alone, is admissible, which has been held, there is in principle no substantial reason why a medical expert, who has not made an examination of the patient whose physical or mental condition he is called on to determine, but has heard it described by witnesses at the trial, should not answer similar questions without their being hypothetically framed. By this form of examination no injustice is done, for whatever reasons, even to the smallest details, that an expert may have for his opinion, can be fully brought out by cross-examination. But here, as in other matters relating to the general management of trials, much must be left to the judgment of the trial court, which will not be revised unless the course pursued plainly was prejudicial to the legal rights of the defendant. Thus the length of hypothetical questions, or whether the facts assumed are within the hypothesis on which it is claimed the case rests, or whether a witness is professionally qualified, or is sufficiently acquainted with the history of the case to give an opinion, are as well within the reasonable exercise of this power as the order of presentation of evidence, etc. It further must be held that, as each of these experts also testified from personal observation of the defendant, a direct question calling for their opinion *formed on* such an examination would have been competent. As the case stood, their opinions rested on the assumption of the truth of the uncontradicted testimony, so far as material, which each had heard, considered in the light of the knowledge of his intellectual condition previously obtained from actual contact. The number of witnesses does not alter the practical operation of the rule, if there was no *conflict* of evidence, or the facts so complicated that there may be danger of the jury being confused and misled. But if the evidence is of a complicated and contradictory character, and such that it would be likely to be understood differently by intelligent jurors, the question should call for the facts on which the opinion is founded. Evidence descriptive of the attitude and appearance of the defendant when under scrutiny by one of the experts was entirely competent, either as being in the nature of a conversation with him, or as furnishing a reason for the opinion of the witness. But an exception taken to the omission of any instruction that experts, when testifying as witnesses, must state the grounds or reasons for their opinions, was untenable. If the defendant desired their reasons, his counsel were not precluded from asking for them on cross-examination. There is no general rule of practice which makes it imperative on the party calling such a witness, that, after he has been duly qualified and given an opinion, his reasons therefor also must be stated, though it is frequently done.

Current Medical Literature

AMERICAN.

Titles marked with an asterisk (*) are abstracted below.

American Medicine, Philadelphia.

September 2.

1 *Cryoscopy. T. Tieken, Chicago.
2 *Study of the Gastric Contents in Urticaria. L. K. Hirshberg, Baltimore.
3 Bacterial Flora of the Intestinal Mucosa and Conjunctiva of the Normal Chicken. W. E. King, Ithaca, N. Y.
4 *Arteriosclerosis Affecting the Nervous System. B. C. Loveland, Syracuse, N. Y.
5 *Etiology and Diagnosis of Early Tubal Pregnancy. W. E. Ground, Superior, Wis.
6 *Some Gynecologic Superstitions. L. Waite, Chicago.

1. **Cryoscopy.**—Tieken reviews the literature on the subject, and gives a résumé of the work done and conclusions drawn by various writers.

2. **Gastric Contents in Urticaria.**—In eight cases of urticaria, Hirschberg noted the frequent coincidence of hyperacidity in this condition. Five of his eight cases showed a high total acidity, with much free hydrochloric acid.

4. **Arteriosclerosis Affecting the Nervous System.**—Loveland says that arteriosclerosis affecting the nervous system naturally would be divided into three or possibly four classes: cerebral, spinal, peripheral and possibly sympathetic. Cerebral arteriosclerosis may be divided into a major and a minor type. The major type passes rapidly to apoplexy and paralysis or death, and has few symptoms early in its course. The minor type comprises a complex of symptoms which are the direct expression of the vascular change, exclusive of such accidents as hemorrhage and its consequences. The symptoms include fatigue or exhaustion of the brain; the inability to take up new work, while familiar work can still be done; headache, usually frontal and persistent, increased by stooping and abdominal pressure; slight vertigo and loss of memory—in fact, the symptom-complex so frequently associated with neurasthenia. Arteriosclerosis of the spinal cord has the same major and minor types, the former marked by small hemorrhages, paralysis and rapid degeneration and myelitis; the latter by the slower degenerations of the cord such as the locomotor ataxia following syphilis. The effect of arteriosclerosis on the peripheral nerves is well illustrated by intermittent claudication, Reynaud's disease, acroparesthesia and quite a variety of sensory disturbances in the extremities such as persistent coldness, formication, itching or burning sensations, and possibly the neuritis so frequent in gouty diabetes. The effects on the sympathetic nerves are not so easily recognized, but when the arterial trouble can be determined elsewhere such symptoms as cardiac irregularity, some vague nervous sensations associated with digestion, persistent flushing of the skin sometimes associated with albuminuria, may be attributed to this cause. The treatment is the same so far as medicine and diet are concerned as in general arteriosclerosis; the two points which make for the best success are early diagnosis and persistent, continued care.

5. **Etiology and Diagnosis of Early Tubal Pregnancy.**—Ground has operated in 28 cases of tubal pregnancy. Of these, 21 patients were operated on after rupture and 7 before rupture had occurred. In all prerupture cases abdominal sections were performed. Of the complicated cases 16 were suprapubic

and 5 vaginal. All the patients recovered. All had demonstrable lesions sufficient to account for the arrest of the fecundated ovum in the tube. The results of gonorrheal infection and minor postpuerperal lesions were most frequently noted as etiologic factors.

6. Some Gynecologic Superstitions.—Waite states that gynecology has been encumbered with numerous dogmatic theories which have been stated and restated so many times that they have been finally accepted by the profession without question and have become veritable superstitions. She takes up the questions especially of backache and constipation as symptoms supposed to be caused by retrodisplacements of the uterus and shows by statistics that both of these conditions are present in a large percentage of antipositions and absent in a fair percentage of retropositions. In 1,000 cases taken from her clinic at the Mary Thompson Hospital 44 per cent. of the patients with antiposition gave a history of backache and 41 per cent. of the patients with retrodeviation stated definitely that they did not suffer with backache. In 500 cases 52 per cent. of the patients with antiposition gave a history of constipation, and of the cases of retroposition 34 per cent. of the patients reported normal bowel movements. The question of childbearing as a remedy in dysmenorrhea is also discussed. Of 300 patients the question, "Have you more or less pain since the birth of your children?" 45 per cent. reported more pain, 30 per cent. less and 25 per cent. no difference. Waite believes that the practical application of the statistics relating to the clinical significance of retroposition of the uterus bears directly on the enormous amount of unnecessary operating which is being done under the false impression that the symptoms of which the patient complains are due to the position of the uterus and the complications which are in reality responsible for the symptoms are overlooked.

Medical News, New York.

September 2.

7 Prognosis in Syphilis. R. W. Taylor, New York.
8 Prognosis of Syphilis: Relations to Marriage and Heredity. P. A. Morrow, New York.
9 Dermoid Cysts of the Mediastinum. (Continued.) R. S. Morris, Ann Arbor, Mich.
10 *Social Status of Tuberculous Persons. W. W. Pennell, Mt. Vernon, Ohio.
11 *Medical Treatment of Nephritis. A. R. Elliott, Chicago.
12 *Care of the Perineum, with Description of a New Method of Delivery of the Shoulder. H. K. Kerr, Hammond, N. Y.

10. Social Status of Tuberculous Persons.—Pennell directs attention to the danger of infection from a tuberculous person, the many sources of infection and what should be done in the matter. He says that the public should understand that tuberculosis is infectious to susceptible people; that it requires intimate and continued contact for others, but that daily contact with many different tuberculous persons may act as continued contact with one person; that houses in which tuberculous persons have lived or died are infected houses, therefore unfit to live in until thoroughly fumigated and cleansed. When persons are suspected of having tuberculosis and refuse to employ a physician, a health board should send a competent medical man to examine such invalids. On the filing of such examiner's report, if the persons prove to be tuberculous, the movements of the affected individuals should comply with the regulations made for the restriction of those maladies which are dangerous to others. Pennell urges a just, humane and adequate segregation of all cases of pulmonary tuberculosis.

11. Medical Treatment of Nephritis.—Elliott states that recent contributors to the therapy of Bright's disease, including von Noorden and his school, confine their attention too strictly to the kidneys, whereas the disease is a widespread nutritive disturbance involving the organism as a whole with the nephritis as but one manifestation. He urges the necessity of careful examination of the patient in all respects, and the correction of any other functional perversion which may be found to exist in order to eliminate sources of systemic toxemia. Individualism in the management of this disease is absolutely necessary. The medical treatment is discussed under the headings of: 1, Nephritis without dropsy; 2, nephritis with dropsy; 3, uremia. Cases of nephritis without dropsy are chiefly examples of chronic interstitial nephritis during the stage of cardiovascular compensation. The main indications in the management of this type of chronic nephritis are protection of the kidneys from irritation, especially the strain imposed by intercurrent acute toxemias, and secondly, the maintenance of cardiovascular compensation. The first of these two indications is fulfilled by regulation of the patients' diet and personal hygiene. The amount of water to be drunk and the hygiene of the bowels are of particular importance. The management of cardiovascular compensation becomes essential in the regulation of high blood pressure. Elliott warns against unwarrantable interference with medicinal measures. Diet, hygiene and free elimination of the bowels accomplish the purpose best. If these fail, and the patient suffers from excessive pulse tension, vasodilator drugs may be administered. The action of the various nitrites, aconite and iodids for the reduction of blood pressure is discussed. In nephritis without edema, digitalis and other cardiac stimulants are to be withheld and diuretics are not only unnecessary but harmful. When dropsy is renal in origin, diuretics have next to no influence. Prolonged rest in the recumbent position, restriction of fluid intake, hypochlorization, diaphoresis, colonic irrigation, subcutaneous puncture and paracentesis are to be employed. If the dropsy is of cardiac origin, cardiac tonics, rest and restriction of fluids are the measures indicated. The value of iron in Bright's disease is also discussed. In the prophylaxis of uremia the author lays great stress on the employment of purgatives and enteroclysis with alkaline solutions. The value of blood pressure observations in anticipating the advent of uremia is dwelt on, and the action of venesection and lumbar puncture in relieving the high tension of uremia is described. Elliott deprecates the attitude of pessimism toward the prognosis of Bright's disease which is held by so many of the profession. He calls attention to Nature's wonderful powers of adjustment in damaged organic states, nowhere so marvelously displayed as in organic kidney disease, showing that assistance only is needed, seldom interference. The two most important indications in the treatment of chronic nephritis are to protect the patient from intercurrent acute toxemias and to maintain the compensatory adjustment in the circulation.

12. New Method of Delivery of Shoulder.—With the patient on her left side, the head being delivered and rotation affected, Kerr places his left hand on the right side of the child's head and presses back firmly. This stretches the perineum from its circumference, laterally and posteriorly, toward the center and anteriorly. Muscular contraction is thereby almost entirely overcome. The perineum is temporarily paralyzed and is elastic like rubber and can hardly be made to tear. By carrying the left shoulder back into the perineum the right shoulder is lowered into the pubic arch. When a pain occurs the left shoulder can not descend, because it is held well back and high up in the perineum. The right shoulder, on the other hand, descends, and as it does so it describes part of a circle around the left shoulder held as a fixed point high up in the perineum, so that the course of the right shoulder is downward and slightly backward, bringing the prominence of the shoulder well back into the vulvovaginal outlet and the right arm below the shoulder into the pubic arch. One pain is usually enough to bring down the right shoulder and cause it to bulge well out of the vulva. This accomplished, the fingers of the left hand, with which backward pressure is being made, low down on the back of the neck or upper end of the spine, are closed and the physician presses up. This increases the space between the back of the child and the maternal soft parts on the left side below and also opens the right axilla. Through this opening in the axilla the forefinger of the right hand is passed and hooked around the arm, close to the shoulder, bringing it down behind the child's back out of the vulva and sweeping it over the pubic arch. Then, before relaxing the grip with the left hand, the right hand is placed on the left side of the child's head and, with the left supporting the perineum, by a downward, forward and slightly upward movement, delivery is effected. Thus, before there is the slightest strain on the anterior part of the perineum, the long diameter—from the tip of one shoulder to the tip of the other (bisacromial)—is exchanged for the shorter diameter—from the axilla to the tip of the opposite shoulder (axilla-acromial) as a presenting part, the difference again between laceration and practically no danger of laceration. This procedure is mainly applicable to uncomplicated cases, which are in the great majority. It can be employed in most forceps cases by removing the instruments.

Medical Record, New York.

September 2.

13 *Two Cases of Functional Strabismus. D. B. St. J. Roosa, New York.
14 *Food Factor in Uricemia. F. Hare, London.
15 *Tuberculosis Clinic at Gouverneur Hospital. S. S. Bradford and N. G. Seymour, New York.
16 *Cystoscopy and Ureteral Catheterization in Gynecology. H. D. Furniss, New York.
17 *Abuse of Bromids in Epilepsy. W. P. Spratling, Sonyea, N. Y.
18 *Convenient Points for Intramuscular Injections in the Treatment of Syphilis. V. C. Pedersen, New York.
19 Case of Acute Hemorrhagic Pancreatitis. C. M. Tinney, Charleston, Wash.
20 *Hospital Building in the Philippine Provinces. D. G. McCaskey, Buena Vista, P. I.

13. **Functional Strabismus.**—Roosa's first case did not yield to the treatment usually employed, but finally, after two and a half years, after all treatment except the use of the stereoscope and correcting glasses had been dropped, the intermittent strabismus ceased and has not returned. The other patient was cured by the use of glasses and exercises which involved exclusion of the good eye at intervals, and the use of the stereoscope. Now, at the end of eight years, the strabismus has disappeared, though correcting glasses are still worn.

14. **Food Factor in Uricemia.**—Hare analyzes the conditions, such as diet, exercise, pyrexia, neuroses, etc., which induce "pyremia" or uremic variations. He says that there seems to be little doubt that uric acid excretion depends directly on the introduction of uric-acid forming material, and inversely of the degree of pyremia. There will thus be at least a double column of variations in the excretion of uric acid. But since on a mixed diet, the introduction of uric acid material is for the most part approximately concurrent with the increase of "pyremia" due to meals, it follows that the resulting opposite variations in uric acid excretion will overlap and tend to obscure each other. The argument for the twofold causation of uricemia and uric acid excretion, seems, in his opinion, appropriately clinched by the following two pertinent observations: 1. The delayed excretion of uric acid which in the gouty follows the ingestion of uric-acid forming material. 2. The uniformity of uric acid excretion during starvation.

15. **Tuberculosis Clinic at Gouverneur Hospital.**—Bradford and Seymour state that 338 patients have applied for treatment at the hospital from October, 1903, to June, 1905. Two hundred of these were men, and almost one-half of the total number were Russians. Of the 338 cases 85 patients are still under observation, 120 have disappeared, 52 have gone to hospitals, to the country, or to their homes in Europe, 14 have been referred to other clinics as non-tuberculous, and 9 have died. Fifty-one patients have been discharged for insubordination. Seven patients have been discharged as "apparently cured," though they are requested still to report occasionally for observation. Such cases are those in which all constitutional symptoms and expectoration with bacilli have been absent for a period of three months, and the physical signs are those of a healed lesion. The authors believe that the clinic has accomplished four definite and excellent results: 1. It has withdrawn the tuberculous patients into a class by themselves, thus relieving the overcrowded medical clinic and providing some protection to non-tuberculous patients. 2. It has provided a place for the systematic treatment of ambulant cases of the disease in a district of the city thickly populated and extensively exposed to the contagion. 3. It reaches patients heretofore untreated, or treated irregularly and unsystematically. 4. The patients so treated have become a source of education in their homes rather than a menace to their associates.

16. **Cystoscopy and Urethral Catheterization in Gynecology.**—Furniss discusses the technic of cystoscopy, meatoscopy of the ureteral orifices, and ureteral catheterization. He gives the preference to an instrument of the water dilating variety, direct view with catheterizing attachment, as with this all of the bladder can be examined except the anterior wall, which is seldom affected, and catheterization of the ureters with a direct view instrument is far easier than with one of the prism type. The subject of ureteral meatoscopy is given much importance, and the use of the ureteral catheter in hysterectomies, stricture of the ureter, etc., is described. Furniss recommends lavage of the renal pelvis for pyelitis, but believes that the cases of Bright's disease reported benefited by this means were really ones of pyelitis with a few casts in the urine, rather than cases of true nephritis.

17. **Abuse of Bromids in Epilepsy.**—Spratling says that bromids have a limited range of usefulness in their power of suppressing epileptic convulsions, but he has never given the bromid of potassium to an epileptic, and says that the cases must be carefully selected for the use of the other salts. At the Craig Colony the average dose of the drug is 15 grains a day, 5 grains at a time. Spratling personally analyzed twenty-seven patent nostrums for epilepsy and found that the basis of all, without exception, was bromid of potassium. If recoveries occur under the use of the drug, it is in spite of it and not on account of it. When used the bromids must be prescribed with the greatest caution, and it is rarely necessary to push them to the point of producing acne. Their disadvantages are many, and it is preferable to use other harmless depressants in their stead, and to treat the individual instead of one of the symptoms of his disease.

18. **Intramuscular Injections in Syphilis.**—Pedersen describes and illustrates a plan of subdividing the two gluteal regions into four quadrants and making three injections in each of these in rotation in such a manner that the same spot is made the site of operation only once in thirteen weeks. He also describes the technic of injection.

20. **Hospital Building in the Philippines.**—McCaskey describes and illustrates the building of a bamboo hospital at Buena Vista.

Boston Medical and Surgical Journal.

August 31.

21 *Stokes-Adams Syndrome. T. J. Foley, Worcester, Mass.
22 *Ulcer and Cancer of the Stomach: Their Relationship. C. Graham, Rochester, Minn.
23 A Study in Abnormal Psychology. G. M. Parker, New York.
24 What the Suburban Surgeon Is Doing in the Abdomen and How He Does It. C. E. Durant, Haverhill, Mass.

21. **Stokes-Adams Syndrome.**—Foley reports two cases and gives a short résumé of the literatrue.

22. **Relationship of Ulcer and Cancer of the Stomach.**—Graham says that clinical experience shows that the great majority of ulcers of the stomach are located at the pyloric end. The immediate pylorus comes first, the lesser curvature second. A small percentage is found elsewhere, few at the cardia. The great per cent. of cancers of the stomach is found at the pylorus and lesser curvature (pyloric end), that is, the same locations find the greatest number of each. Quite a per cent. (50 to 60) of patients suffering from carcinoma gives three or more years of a precancerous history. A growing per cent. of cancer cases are found with short histories and ulcer demonstrated as the earlier lesion. A certain per cent., if small, of short ulcer histories leading to acute pyloric obstruction where the ulcer must have been present for quite a period, and latent. Ulcers may be present for an indefinite period and no symptoms follow until obstruction, perforation and hemorrhage appear, if the acidity is low or absent and the ulcer locates itself along the lesser curvature or near the pylorus. Cancers may develop under the same gastric conditions and only manifest themselves when obstruction or systemic poisoning makes itself felt.

New York Medical Journal.

September 2.

25 Resuscitation by Manipulation of the Heart of a Patient Apparently Dead from Shock. W. S. Conkling, Des Moines, Iowa.
26 The Mephisto of the Pale Brotherhood of Disease: Study of Masked [illegible] ot on Books, But Experience. G. F. [illegible]
27 Tropical [illegible] of the Angola Highlands. F. C. Wellman, Benguella, West Africa. (Continued.)
28 Six Lectures on the Diseases of the Blood. J. M. Swan, Philadelphia. (To be continued).
29 End Results in Surgery of the Kidney, Based on a Study of Ninety Cases, with One Hundred and [illegible] Operations. A. Vander Veer, Alban[illegible]
30 *Contribution to the Surgery o[illegible] Ulcer. A. B. Mitchell, Belfast, Irelan[illegible]
31 *Some Heart Points for Medical [illegible], New York.
32 Further Research in Tuberculosis. J. D. Gibson, Denver, Colo.

30. **Gastric Ulcer.**—Mitchell reports 14 patients operated on, with 7 recoveries.

31. **Heart Points for Medical Examiners.**—Ellis calls attention to some errors made by examiners in interpreting heart findings and mentions points of distinction which will serve to guide examiners in estimating a risk correctly.

Lancet-Clinic, Cincinnati.

September 2.

33 Congestive Hyperemia in the Treatment of Acute Suppuration. M. Salzer, Cincinnati.
34 Recent Observations on the Action and Therapeutic Value of Currents of High Frequency and High Potential. C. Pope, Louisville, Ky.
35 Education and the Hygiene of the Nervous System. H. H. Hoppe, Cincinnati. (Continued.)

Physician and Surgeon, Detroit and Ann Arbor.

August.

36 *Value of Statistics in the Study of Cancers.* T. A. McGraw, Detroit.
37 Historical Sketch of the Nerves of the Female Genitals—The Pelvic Brain. B. Robinson, Chicago.

Ophthalmic Record, Chicago.

August.

38 **Origin of the* [illegible] l the Blepharospastic [illegible]
39 [illegible] traction of the Lens, [illegible] in the Capsule, with [illegible] ls and E. S. Thompson, New York.
40 Case of Discoloration of the Cornea by Blood Pigment, and One of Hemorrhage into the Cornea. O. F. Wadsworth, Boston.
41 *New Instrument: To Shorten the Subjective Branch of Refraction and to Make it More Accurate. J. N. Rhoads, Philadelphia.

38. **Origin of Pain in Photophobia.**—Fridenberg distinguishes two classes of photophobia which differ in cause and mechanism, although both may be accompanied by similar external and superficial manifestations. 1. Specific, idiopathic, primary, retinal photophobia, representing a reflex from the optic nerve to the sensory branches of the trigeminus or ciliary nerve, or to the motor nerves of the eye and lids, and due to hyperesthesia of the nerve filaments engaged in light perception, or to excessive stimulation of normal structures. The discomfort in these cases is caused by intense "specific" stimulation of the retina; actual pain by iris cramp. This form is that observed in normal eyes suddenly exposed to glaring light, as in retinal asthenopia, neurasthenia, hysteria and perhaps in snowblindness. 2. Secondary, symptomatic, superficial, corneal photophobia, due to hyperesthesia of the sensory nerve terminals in the skin of the lids, cornea, conjunctiva, and ciliary body, as well is in the mucous membrane of the nose, in the maxillary antrum, teeth, and representing the reflex from the sensory fibers of the trigeminal nerve, and other nerves, to the motor branches of the facial. In this class of photophobia we have to deal with corneal or ciliary pain, absolutely independent of any process in the iris or retina. The most frequent causes of such pain are the irritation of the superficial nerve endings in abrasion or foreign body in the cornea, corneal ulcer, sympathetic iritis, cyclitis, ciliary wounds, and so forth. Of this form, which Fridenberg designates as pseudo-photophobia, or the blepharospastic syndrome, phlyctenular keratitis is a characteristic paradigm, and tonic blepharospasm the clinical expression.

41. **New Lens Holder.**—Rhoads has devised a lens holder which shortens the subjective branch of refraction and makes it more accurate. This instrument is six and one-half inches long, and contains a plus and minus lens of the same relative strength, that is, a plus 0.50 Sp., and a minus 0.50 Sp., or minus and plus quarters. The long straight shank has the minus lens attached to it and the short shank carries the plus lens. The short shank is movable and is held in place by a spring, but when its upper short end is pressed on it rises up parallel and directly over the long shank, and consequently the lenses neutralize each other, thus making a third glass. He also uses a pair of cylinders fastened to the same kind of shanks, which neutralize themselves in the same manner. The axes of the cylinders are placed parallel with and straight out from the shanks. The lens rings are one inch and a quarter in diameter. This instrument is just a little less important than Jackson's cross cylinder. It shortens the time consumed in refraction exceedingly, and renders the result far more accurate. After a patient has been shadow tested it rarely takes over five minutes with each eye to finish the refraction by this method. Owing to the short time it takes with this instrument and system, nervous and even illiterate women answer promptly and correctly, and thus are not tired out and sent home to their beds for a couple of days, as is quite often the result by the generally used method.

Journal of Cutaneous Diseases, New York.

August.

42 *Follicles of the Skin and Conjunctiva.* H. G. Anthony, Chicago.
43 *Location of Extragenital Chancres. D. W. Montgomery, San Francisco.
44 *Case of Chronic Pyogenic Onychitis Cured by the X-Ray. G. E. Pfahler, Philadelphia.

43. **Location of Extragenital Chancres.**—Of 67 cases of extragenital chancre Montgomery noted the location of the lesion in 58 as follows: Lips, 25; tongue, 3; corner of mouth, 4; abdomen, 5; anus, 3; fingers, 7; forearm, 2; and one each on gums, tonsil, cheek, eye, neck, breast, nates, wrist and back of hand. Twenty of the lip chancres, or nearly 68 per cent., occurred in women. In 17 of these cases the lower lip was the one affected.

44. **X-Ray in Chronic Pyogenic Onychitis.**—The case cited by Pfahler resisted all forms of internal and local treatment and yielded to the *x*-ray in three months. *X*-ray treatment was given three times a week, with the tube six inches distant, a two and one-half inch vacuum and five minutes' exposure, using about 1 mp. through the tube. Improvement was noted after two weeks. Twenty-five treatments in all were given.

Interstate Medical Journal, St. Louis.

August.

45 Differential Diagnosis of Organic Hemiplegia and Hysteric Hemiplegia. J. Babinski, Paris.
46 *Conservation of the Parietal Motor Nerves in Abdominal Section. V. P. Blair, St. Louis.

46. **Conservation of Nerves in Abdominal Section.**—Attention is directed by Blair to the necessity of conserving the motor nerves supplying the abdominal region when incising the parietes. He attempts to show how these nerves are to be avoided and to give the lines on which incisions may be made which will likely pass between the nerve trunks. He says of the various abdominal incisions that the least harmful is that made in the median line, either straight through or continued through the posterior wall of the sheath after the rectus has been drawn outward. It is only when these incisions are inadequate that we have to consider the nerves. Quite as harmless, if we avoid the nerve trunks, for it cuts no muscles is that made in the linia semilunaris. Some nerve fibers will be divided wherever we cut into muscle by any other method than proper splitting, but we can, in most cases, avoid the trunks. In the subcostal incision for approaching the gall bladder, which is four inches long parallel to and from one and one-half to two inches below the right costal border, the tenth and eleventh nerve trunks will be severed if the wall is cut straight through. The fibers of the internal oblique run parallel to the cut, so that it can be split, and in this way the nerves may be found and drawn aside. This might not be practical in the very stout. Even here part of the supply of the external oblique will be cut off, as it comes from the lateral branches. He advises approaching all obscure epigastric cases through an exploratory incision in the median line, and then, if a complicated gallstone operation requires more room, a cut can be made from the umbilicus toward the cartilage of the eleventh rib and a flap turned up containing the eighth, ninth and tenth nerves, and more room be gained than by any other incision. If it proves to be a gastric case demanding freer access, a supplementary transverse incision may be made between the eighth and ninth, or ninth and tenth nerves, preferably the former, which will not cut nerve trunks. Then, if the wound has been kept clean and well sutured, there need be no fear of hernia. In the splitting operation no nerves will be cut if Kocher's admonition is heeded, which is to use hooks and to tear the muscles apart. Practically the crooked thumbs are sufficient. Kocher's incision for appendicitis would most likely be below the twelfth nerve, provided the incision does not extend backward beyond the anterior iliac spine. The cut for suppurating cases, made one finger's breadth above the ligament, would in most cases go above the hypogastric

nerve. An extensive lumbo-lateral abdominal incision that cuts no nerves may be made as follows: A flap of any size may be raised by cutting from the tip of the last rib to the linea alba between the eleventh and twelfth nerves and then extending the incision in the median line. All of these may be modified so as to divide the rectus transversely. All incisions should be made to allow some variation, and it is only in through-and-through cuts that the variation can cause trouble.

American Journal of Medical Sciences, Philadelphia.

August.

47 Notes on Otitic Epilepsy. B. A. Randall, Philadelphia.
48 Two Fatal Cases of Brain Abscess. E. B. Dench, New York.
49 Orbital and Meningeal Infection from the Ethmoid Cells; Death. J. F. McCaw, Watertown, N. Y.
50 *Unusual Case of Edema of the Glottis. E. Mayer, New York.
51 Sarcoma of the Vomer, with Extensive Involvement of the Adjacent Structures and Metastasis in the Cranium. A. P. Herring, Baltimore, Md.
52 Lymphatic Drainage of the Faucial Tonsils. G. B. Wood, Philadelphia.
53 Obscurity of Diagnosis Sometimes Attending Stone in the Kidney. D. D. Stewart, Philadelphia.
54 Certain Hypertensive Crises in Arteriosclerotic Subjects. J. B. Briggs, Washington, D. C.
55 Tinea Versicolor in an Institution. H. J. Nichols, Washington, D. C.
56 Clinical, Bacteriologic and Metabolic Aspects of a Case of Traumatic Tetanus; Treatment with Tetanus Antitoxin; Recovery. H. Heiman, L. Buerger and E. A. Aronson, New York.
57 Epithelioma of the Vulva. H. Dittrick, Cleveland, Ohio.
58 Necrotic Stomatitis Following Measles and Pneumonia. R. M. Goepp, Philadelphia.
59 *Negative Value of Kernig's Sign. R. N. Willson, Philadelphia.
60 Diminutive Spleen. W. J. Calvert, Columbia, Mo.
61 Torsion of the Great Omentum. E. M. Corner and H. I. Pinches, London.
62 Congenital Tricuspid Stenosis Complicated by Mitral Stenosis. B. Stow, New York.

50. **Unusual Case of Edema Glottis.**—The point of interest in Mayer's case lies in the fact that the edema of the glottis was engrafted on a hereditary syphilis of the epiglottis, which latter never produced any noticeable symptoms relative to the throat, except a constant cough of twenty-eight years' duration. The absence of any initial lesion, as also of any evidence of the disease elsewhere, pointed strongly to the hereditary nature of the affection. The case also illustrates the advantage of prompt, free and deep incisions into the edematous tissue, thus avoiding the graver operation of tracheotomy, and emphasizes the value of adrenalin in the subsequent treatment of these conditions.

59. **Negative Value of Kernig's Sign.**—Willson examined 120 cases of all kinds for the purpose of determining the clinical value of Kernig's sign. As a result of his study he concludes that Kernig's sign is by no means a positive indication of either meningeal or brain or cord involvement, but that when present in association with other signs of meningitis it may be looked on as confirmatory to a high degree. Undoubtedly, in the majority of cases, it persists far into the convalescence, and is usually one of the last signs to disappear. In certain cases it probably remains as a permanent indication of a former undetermined lesion.

Bulletin Johns Hopkins Hospital, Baltimore.

August.

63 Surgical Physiology. G. W. Crile, Cleveland, Ohio.
64 Needle and Clamp for Injecting Lymphatics. W. S. Miller, Milwaukee.
65 Marcello Malpighii. 1628-1694. W. G. MacCallum, Baltimore.
66 *Typhoid Appendicitis Without Other Intestinal Lesions. W. R. Stokes and A. L. Amick, Baltimore.
67 Pathologic Anatomy of Exophthalmic Goiter. W. G. MacCallum, Baltimore.

66. **Typhoid Appendicitis.**—A case of typhoid appendicitis without other intestinal lesions is reported by Stokes and Amick. Thirteen years previously the patient had a very severe attack of typhoid. His last illness began with a severe pain in the entire abdomen, which later became localized in the right iliac region. This was followed by nausea, vomiting and slight diarrhea. An appendicectomy was performed, and the patient made a complete and uneventful recovery. The appendix was about three times the normal size and about midway between the tip and the intestinal attachment. The wall was thin and gangrenous and about to rupture from distension. The mucous membrane was covered in places with a dirty, gray, fibrinous membrane, and at its base there was an irregular ulcer. The lumen contained three soft, putty-like, light yellow concretions. The *Bacillus pyocyaneus* and *Bacillus typhosus* were found in stained sections. In some portions of the appendix the pathologic change corresponded to that seen in acute diffuse appendicitis, while in other portions where there was no surface ulceration the changes were more characteristic of typhoid, and were probably the reaction to the presence of the typhoid bacillus.

American Journal of Obstetrics, New York.

August.

68 *Report of Seven Cesarean Sections. J. D. Voorhees, New York.
69 Twisted Pedicle in Ovarian and Par-ovarian Cysts. A. Brothers, New York.
70 Treatment of Fibroid Tumors of the Uterus. J. W. Bovée, Washington, D. C.
71 Ciliated Cysts and Glands of the Uterine, Tubal and Pelvic Serosa. A. E. Blount, Oak Park, Ill.
72 *Relation of the Appendix to Pelvic Disease. R. Peterson, Ann Arbor, Mich.
73 *Inflammatory Conditions of the Appendix Accidentally Brought to Light in Pelvic Operations. H. Robb, Cleveland, Ohio.
74 *Appendicitis in Relation to Pelvic Disease and Pregnancy. A. L. Smith, Montreal, Canada.
75 *Reasons for Removing the Vermiform Appendix in Nearly All Cases in which the Abdomen is Opened for Other Lesions W. A. Baker, Boston.

68. **Cesarean Section.**—Voorhees reports seven Cesarean sections, and reviews the history of this operation as found in the literature. He concludes that Cesarean section is a dangerous operation only when infection is present; that there are too many fetal deaths from the other major operations; that in view of the low maternal mortality the field for Cesarean section should be broadened; that in contracted pelvis of a moderate degree (in the border line cases), a late induction of labor is justifiable; that when possible, difficult versions, prolonged forceps operations, and high forceps operations, performed in early labor, should be avoided. That craniectomy on a living baby is an operation only of necessity and emergency; that symphyseotomy is an operation of the past.

72.—See abstract in The Journal, Sept. 10, 1904, page 756.

73. Id.—June 10, 1905, page 1878.

74. Id.—June 17, 1905, page 1955.

75. **Removing Appendix When Abdomen Is Opened for Other Lesions.**—Baker cites cases to show that the presence of adhesions of, or fetal concretions within the appendix are not the only evidence of appendicitis which should influence the surgeon for its removal. The appearance of the normal appendix at the time of the operation has proved to be unreliable, as in three-fifths of the cases reported the patients were suffering from chronic appendicitis. The advantages to be derived as a prophylactic measure from the removal of the appendix, even in cases which prove normal, far outweigh the slight additional risk incurred by the operation. The great frequency with which appendicular troubles present themselves warrant not only the removal of the appendix, when it is easily accessible, when performing abdominal section for other lesions, but also the careful searching for and removal of it even though it may appear normal from its gross appearance.

American Journal of Urology, New York.

August.

76 Present-day Status of Tuberculosis of the Male Genital Organs. E. R. W. Frank, Berlin.
77 *Syringe Versus the Irrigator in Gonorrhea. F. C. Valentine and T. M. Townsend, New York.
78 *Some Untoward Results of Perineal Prostatectomy. G. S. Whiteside, Portland, Ore.

77. **Syringe versus Irrigator.**—Concisely stated, the position held by Valentine and Townsend with reference to the value of the irrigation treatment of gonorrhea is as follows: Even the mildest manifestation of gonorrhea spells a dangerous disease to the patient, to his wife, to his children and to the community. No honest, conscientious advocate of the irrigation treatment of gonorrhea ever claimed that a patient was cured before all the tests which present science demands have shown the permanent absence of gonococci. The irrigation treatment, like any other treatment, is positively dangerous, unless employed with caution, tact and gentleness. The immense numbers of gonorrheas successfully treated by irrigations, owe their recovery to the operator's gentleness and judgment. The technic of irrigations is not so difficult to acquire, but their successful employment requires the same scrupulous attention to details that is demanded by every other remedial measure in any other disease. The choice of

drugs used in irrigating solutions is not limited to potassium permanganate, silver nitrate or mercuric bichlorid, but is governed by the needs of each case. The guides for the selection of drugs and the strength of the solutions employed are, the condition of the discharge, the microscopic and cultural results, the character of the urine, and such involvements of the major and minor adnexa as may exist. Chronic gonorrhea is always dependent on infiltration of the urethral mucosa, involvement of the urethral crypts, glands and follicles, or invasion of Cowper's glands, the prostate or seminal vesicles, or all these; therefore, treatment of these extensions of the disease is necessary in conjunction with irrigations. When a patient with acute anterior gonorrhea comes under treatment before the adnexa are involved, he will escape complications, if irrigations are cautiously, skillfully, gently and judiciously employed. No other form of treatment will relieve pain and reduce discharge as quickly as do properly administered irrigations.

78. **Perineal Prostatectomy.**—A critical study of 238 cases, collected from many sources, leads Whiteside to say that perineal prostatectomy is considered by the majority of surgeons as the best operation in most cases. Immediate deaths result from sepsis, shock, cardiac disease, pneumonia and uremia. Remote deaths from cancer cachexia, pyonephritis embolism, and the result of secondary operations to overcome defects left by the first. Absolutely good results occur in about 30 per cent. of all the patients operated on. Sequelæ are numerous and troublesome. They include rectal fistula, urinary sinus abscess, stricture at the bladder neck, incontinence, frequency of micturition, residual urine, epididymitis, sexual impotence, cystitis, vesical calculus and urinary tuberculosis. Mistakes in diagnosis are not uncommon even in the experience of the most skillful. Carcinoma, sarcoma and syphilis have all proved stumbling blocks.

American Journal of Surgery, New York.

August.

79 Suture of Veins. Review of the subject. A. E. Isaacs, New York.
80 *Treatment of Hypertrophied Tonsils. J. T. Herron, Jackson, Tenn.
81 *Present Status of the Different Methods of Estimating the Functionating Capacity of the Kidney, with a Brief Account of Chromo-cystoscopy and Its Uses. M. S. Kakels, New York.
82 Paraffin in Surgery. Critical and Clinical Study. W. H. Luckett, and F. I. Horn, New York.
83 Treatment of Inguinal Hernia. C. B. Mallery, Aberdeen, S. D.
84 Treatment of Cancer by Thyroids Combined with X-Rays, Results in 1904. C. Am Ende, New York.

80.—See abstract in The Journal, May 6, 1905, page 1476.

81. **Estimating Functionating Capacity of Kidney.**—Kalkes considers chromocystoscopy the safest, simplest and most practical means of ascertaining the presence of the kidney. The existence of the second functionating kidney should always be assured before doing any cutting operation on the kidney, especially a nephrectomy. For practical purposes the function of the kidney is best determined by chromocystoscopy, by cryoscopy and by the phloridzin test. Of less importance for the surgeon, but of interest for laboratory investigations, are the determinations of the toxicity and electric conductivity of the urine. The most reliable method of obtaining the separate urine from each kidney is by ureteral catheterization, but this procedure requires special skill.

Western Medical Review, Lincoln, Neb.

August.

85 Hematuria of Kidney Origin. A. C. Stokes, Omaha, Neb.
86 [illegible]y. A. B. Anderson, Pawnee City.
87 [illegible]tment of Extrauterine Pregnancy. [illegible]Neb.
88 [illegible] Pregnancy. E. C. Henry, Omaha, Neb.
89 *Simple Method of Hystero-myomectomy by the Aid of a Dagger Clamp. H. M. Hepperlen, Beatrice, Neb.

89. **Use of Dagger Clamp in Hystero-myomectomy.**—The method described by Hepperlen is somewhat similar to Kelley's method. The patient is placed in the horizontal position. The abdominal incision does not exceed three inches, except when the tumor is a very large one. After the tumor is delivered a hot, sterile towel is placed snugly in the opening, having the edges come well around the neck of the tumor. The bladder is freed, if it is attached, and if the neck of the tumor can be well drawn up, Hepperlen inserts the dagger of his clamp through the center of the neck, from right to left, leaving as much of the cervix as is necessary. He then applies the clamp over the dagger, which can be drawn up to any size desired, and clamps over the neck of the growth. The ovarian arteries are then ligated on either side close down to the clamp and the tumor removed by making a "V"-shaped cut from either side of the neck down to the dagger. The uterine arteries and veins are picked up and tied twice with Tait's fine table-twist silk. Both sides of the clamp are then opened, one at a time, to see that all hemorrhage is controlled. The stump is then closed over with catgut sutures, from four to six in number, leaving them long so that the stump can be held up by them after the dagger is removed for the purpose of inspecting the large vessels. With the fine catgut suture the whole field is closed over from left to right by stitching the peritoneum over the ovarian vessels and stump, as recommended by Kelley. In the beginning of the operation, should there be adhesions which bind down the tubes and ovaries in the broad ligaments, the ovarian arteries are ligated and cut down on each side of the broad ligaments. This makes it very easy to raise the neck of the tumor up far enough to insert the dagger as low as desired. Hepperlen says that the operation is bloodless; that it can be done in less than half the time required by any intraperitoneal method; that there is less exposure of the internal viscera and less shock, with a lower mortality, than from any other method.

Iowa Medical Journal, Des Moines, Iowa.

July 15.

90 [illegible] D. C. Brockman, Ottumwa.
91 [illegible] the World—to be Used in the Treat[illegible] J. W. Kime, Ft. Dodge.
92 Traumatic Glaucoma. A. R. Amos, Des Moines.

Interstate Medical Journal, St. Louis, Mo.

July.

93 Superstition in Medicine. M. G. Seelig, St. Louis.
94 Brief History of Preventive Medicine. G. C. Crandall, St. Louis.
95 Sir Kenelme Digby, 1603-1665. J. M. Ball, St. Louis.
96 Osteology and the General Practitioner. V. P. Blair, St. Louis.
97 Proper Diet in the Tropics. H. W. Wiley, Washington, D. C.

Northwest Medicine, Seattle, Wash.

July.

98 Electric Injuries. E. R. Edson, Seattle, Wash.
99 Medical Treatment of Gallstones. H. Richardson, Baltimore, Md.
100 Prophylaxis of Syphilis and Its Sequelæ. W. House, Portland, Ore.

California Medical and Surgical Reporter, Los Angeles, Cal.

July.

101 Address Delivered Before Graduating Class of Pacific Hospital Training School for Nurses of Los Angeles, May 13, 1905. J. L. Hagadorn, Los Angeles.
102 Clinical Course of Arteriosclerosis and Chronic Vascular Hypertension. D. Fulton, Los Angeles.
103 General Medical Library for Los Angeles. R. Moore, Los Angeles.
104 Infancy and Adolescence. W. A. Edwards, Los Angeles.
105 Diagnosis of Surgical Lesions of Kidneys. C. D. Lockwood, Los Angeles.

Medical Herald, St. Joseph, Mo.

July.

106 Treatment of Puerperal Fever. R. C. Moore, Omaha.
107 [illegible] of Puerperal Fevers. R. T. Sloan, Kansas City.
108 [illegible]um. A. P. Condon, Omaha.
109 *[illegible] L. B. Pilsbury, Lincoln.

109.—See The Journal, July 15, 1905, page 183.

Archives of Pediatrics, New York.

July.

110 Medical Supervision of Schools and the Progress of School Hygiene. C. G. Jennings, Detroit.
111 Important Differential Points in Diagnosis of Sporadic Cretinism, Mongolism, Achondroplasia and Rachitis. C. Herrman, New York.
112 Chemistry of Cow's Milk. L. L. Van Slyke, Geneva, N. Y.

Journal of Ohio State Medical Association.

July.

113 Surgical Diagnosis in General Practice. J. B. Roberts, Philadelphia.
114 President's Address, Ohio State Medical Association, Sixtieth Annual Meeting. S. S. Halderman, Portsmouth, Ohio.
115 Address of Welcome to Ohio State Medical Association, May 10, 1905. S. Loving.
116 Early Recognition of Glaucoma. S. C. Ayres, Cincinnati.
117 Three Cases of Mushroom Poisoning. S. G. Sewell, Greenville, Ohio.

Journal South Carolina Medical Association, Charleston.

July 21.

118 [illegible], Columbia.
119 [illegible] and Future. E. A. Hines, Seneca.
120 [illegible] J. H. Allen, Spartanburg.

121 Fractures of Every Limb; Recovery. M. J. D. Dantzler, Elloree.
122 Cerebrospinal Meningitis: Hydrophobia. D. Furham. Greenville.

Medical Sentinel, Portland, Ore.

July.

123 Pathology of Lachrymal Gland in Hereditary Syphilis. Wm. L. Wood, Portland.
124 Facts Concerning Bald Heads. H. M. Shaw, Portland.
125 Paratyphoid Septicemia Report. W. C. Belt, Portland.
126 Progressive Muscular Atrophy. R. L. Gillespie, Portland.
127 President's *Address, Portland City and County* Medical Society. J. F. Dickson, Portland.

Postgraduate, New York.

July.

128 Patient Cured of Tubercular Disease of Ankle Joint by Excision, and One Cured of *Hip-joint Disease.* W. O. Plimpton, Brooklyn.
129 Case of Idiopathic Atrophy of the Skin. R. Abrahams, New York.
130 Case of Cystic Kidney. S. S. Burt, *New York.*
131 Epidemic Cerebrospinal Meningitis. W. H. Porter, New York.
132 Amebic Dysentery Treated by Appendicostomy. E. W. Peterson, N. Y.
133 Contribution to Study of Strabismus, with especial Reference to the Operation of Panas for Its Relief. E. S. Peck, New York.
134 Syphilitic Lesions of Nose and Throat. C. Graef, New York.

American Journal of Surgery, New York.

July.

135 Etiology and Treatment of External Biliary Fistula; Report of Case Due to Stricture at Neck of Gall Bladder. L. W. Allen, San Francisco, Cal.
136 Technic of Cervical Sympathectomy. W. F. Campbell, Brooklyn, N. Y.
137 Etiology and Pathology of Appendicitis, Based on Clinical and *Bacteriologic Examination* of Twelve Cases. W. Lenehan, Nashville, Tenn.
138 Etiology, *Diagnosis and Treatment* of Mastoiditis. W. C. Phillips, N. Y.
130 Inversion of Uterus. P. L. Markley, Rockford, Ill..
140 Paraffin in Surgery, Critical and Clinical Study. W. H. Luckett and F. I. Horn, New York.

Texas Medical News, Austin.

July.

141 Scabies. E. A. Blount, Dallas.

American Practitioner and News, Louisville, Ky.

August.

142 Hysteria. O. R. Reesor, Louisville.
143 Gastric Ulcer. J. R. Morrison, Louisville.
144 Tonsillotomy. G. M. Peavler, Louisville.
145 Appendicitis. C. W. Fleenor, Holston Valley, Tenn.
146 Duty of Medical Examiners. H. N. Leavell, Louisville.
147 Osteopathy. D. Graham, Boston, Mass.
148 Reflex Ovarian Conditions, Their Causes, etc. A. D. Willmoth, Louisville.

FOREIGN.

Titles marked with an asterisk (*) are abstracted below. Clinical lectures, single case reports and trials of new drugs and artificial *foods are omitted unless of exceptional general interest.*

British Medical Journal.

August 19.

1 Abdominal Surgery During the Last Twenty-five Years. G. S. Hatton.
2 Physical Degeneration and Syphilis. F. J. Lambkin.
3 Dynamic and Hydro-Dynamic Effects of Modern Small-bore *Cylindro-Conoidal* Projectiles. C. M. Beadnell.
4 Feeding of the Soldier on Active Service. G. S. Robinson.
5 *Care of Soldier's Feet.* G. S. Crawford.
6 Suggestions for First-aid Treatment of Fractured Thigh in *Military or Civil* Practice. J. J. de Z. Marshall.
7 Dysentery and Its Treatment on Active Service. G. A. Hutton.

The Lancet, London.

August 19.

8 Chemical Correlation *of* the Functions *of* the Body. E. H. Starling.
9 *Congenital *Hypertrophic Stenosis* of the *Pylorus,* Successfully Treated Without Operation. W. J. Harper and J. R. Harper.
10 *Subdiaph[illegible] Massage of the Heart as a Means [illegible]. W. Gray.
11 Presence [illegible] Iron in the Thyroid Gland. G. L. [illegible]
12 **Case of* [illegible]rowning.
13 Notes on [illegible]d on Completed Records of 744 Ca[illegible]. Bishop.
14 Continuit[illegible] of the Middle Ear. A. H. Young [illegible]
15 General [illegible] Treated by Antistaphylococcic [illegible] E. F. Maynard and F. G. Bushnell.
16 Elementary State Schools and the Spread of Contagious Diseases of the Skin. P. S. Abraham.
17 Staining [illegible]ochetæ Found in Syphilitic Lesions.
18 *Two Case[illegible] and *the Effect of the* Administration of Suprarenal Extract. A. G. Gullan.

9. Congenital Hypertrophic Stenosis of Pylorus Treated Without Operation.—About *three* weeks after birth, the Harpers' patient began to manifest the symptoms of pyloric stenosis, and these were confirmed by careful physical examination. The question of operative interference was frequently discussed *during the earlier stages of the child's condition,* but was abandoned owing to the apparently hopeless condition. Abdominal massage with cod-liver oil was resorted to in despair, and from the progress of the case it was evident that a certain amount of oil was absorbed *through the skin,* and to this fact the authors attribute a certain proportion of the success of the treatment. The infant also received injec*tions of normal* saline solution, about half a pint, twice daily, and small quantities of peptonized milk and water every two hours for about four weeks, and with but few additions for three months. In massaging the abdomen, particular attention was paid to massage of the stomach wall toward the pylorus. The authors appear to consider the massage and the saline injections the essentials of the treatment.

10. Subdiaphragmatic Transperitoneal Massage of Heart.—Gray's *patient was apparently dead from a cancerous obstruction* of the larynx. There was no pulse at the wrist, no cardiac impulse, no cardiac sounds, and all the evidences of death were present. The abdomen was opened in the middle line immediately under the xiphoid cartilage, and through this opening the heart was massaged about four minutes, the rate of compression being from 70 to 90 per minute. After ten minutes of massage, the heart began to beat and the patient took a rather deep spontaneous breath. Slight hemorrhage occurred from the abdominal wound. The patient died about three hours afterward, having never regained consciousness.

12. Mixed-Cell Leukemia.—A case of this *kind* is reported by Browning occurring in a man, aged 57. He summarizes his paper as follows: 1. Myeloid leukemia is due to a hyperplasia *of myeloid tissue;* but the unknown causative agent is irregular in its action, so that any of the various granular types may predominate or a mixed-cell blood picture *may* result from the reversion of many of the cells to the condition of the non-granular undifferentiated leucoblast or from the hyperplasia of such non-granular cells normally present in the marrow in small numbers. These undifferentiated leucoblasts may assume their embryonic activity and secrete granules. 2. In leukemias a mixed-cell blood picture may be due to: (a) a reversion of myeloid cells to the embryonic non-granular type; and (b) a reaction or mechanical disturbance of *myeloid tissue owing* to lymphoid hyperplasia with as a result the passage of myelocytes into the circulation. 3. It is to be understood that it is left quite an open *question as to* whether or not myeloid and lymphoid tissue may be concomitantly affected *in a* way *similar* to what occurs in myeloid and lymphoid leukemias, respectively. *If* such occurred then we should have a mixed leukemia, in the strict sense.

18. Addison's Disease.—The special points of interest in the two cases reported by Gullan are the severity and rapid progress of the disease in one of the cases, though the lesion was that of chronic *tuberculosis* of the suprarenal bodies, plus secondary inflammation of the neighboring *sympathetic,* and the little benefit derived from the administration of suprarenal extract, so that the patient easily stood the strain of pregnancy and parturition, are the points of interest. The suprarenal extract was given in doses of up to 20 grains three times daily, beginning with a five-grain dose.

Indian Medical Gazette, Calcutta.

August.

19 Treatment of Fractures. F. W. Sumner.
20 Two Cases of Pneumococcus Septicemia with Some Remarks on Pneumonia as Seen on the North-West Frontier of India. F. N. White.
21 *Obscure Irregular Continued Fevers of the "Typhoid" Group and Their *Probable* Relation with Different Species of Bacilli of the Typho-Coli Race. R. Row.
22 Preliminary *Paper on* Extirpation of the Lachrymal Sac in India. R. H. Elliot.
23 *Plague Infection and Flies. F. N. Windsor.
24 Bactericidal Power of Lieutenant Nesfield's Method of Purifying Drinking Water and Sterilizing Water for Surgical Purposes. F. N. Windsor.
25 Puerperal Convulsions. A. M. Dallas.

21. Typhoid in India.—Although for *many* years it was a disputed point whether or not the natives of India could *ever* contract typhoid, the results of recent observations on this subject, according to Row, may be taken to leave no doubt that these natives not only do get the disease, going through the usual clinical course, but also that the nature of the disease can be verified both bacteriologically and, when occasion arises, postmortem. Row has confirmed this belief by a careful study of twenty-three cases.

23. **Flies and Plague.**—The experiments and investigations made by Windsor with a view of obtaining evidence for or against the conveyance of plague infection by flies showed that flies which have had access to material containing plague bacilli (i. e., the plague blood in the watch glass) can carry infection and inoculate a wound. Hence, the sputum from a case of pneumonic plague and the juices of a fresh plague body (as in a postmortem room) may be a grave source of danger Such flies do not appear to convey infection by means of food on which they settle. Flies which have had access to a plague body, but not to the fresh juices or blood, do not appear to be a source of danger. It is almost certain that the juices arising from decomposition do not contain living plague bacilli. In the experiments the absence of fleas from all the rats was insured.

Australasian Medical Gazette, Syndey.

July 20.

26 Cases of Arrested Pulmonary Tuberculosis from King's Tabeland Sanatorium, N. S. W. M. M. Sinclair.
27 Trend of Modern Midwifery. J. R. Purdy.
28 *Use of Liquid Air in Surgery and Skin Diseases. T. G. Beckett.
28½ Catarrh. C. L. M. Iredell.
29 *Preliminary Communication on the Treatment of Arteriosclerosis. E. Hirschfeld.
30 Two Cases of Hypnotic Treatment. R. T. Michell.
31 Sudden Case of Goiter. W. Macansh.

28. **Liquid Air in Surgery and Skin Diseases.**—Liquid air, if applied to the skin lightly and cautiously repeated for a few minutes, Beckett says, will produce a refrigerating effect of any degree of intensity desired, with a resulting complete local anesthesia under the influence of which small surgical operations can be done. If applied too freely and for too long a time, frost-bite effects are produced, even to causing ulceration of the skin. The application is not painful unless the parts are tender and sensitive. Beckett has made use of liquid air in cases of a superficial and more or less malignant nature that have existed and have been incurable for a length of time, such as lupus, rodent ulcer and small epitheliomas. Compared with the *x*-rays, the effect of liquid air is instantaneous; it acts superficially and its use is very simple. All the apparatus required, besides the liquid air, is a suitable glass rod with a small piece of cotton wool wound around the tip of it, the size and shape depending on the degree of intensity required to be attained. When the surface is raw or ulcerated, it is advisable to cut and to place over it a small piece of gauze; otherwise the cotton wool will be quickly frozen to the surface.

29. **Treatment of Arteriosclerosis.**—The systematic employment of hot baths is vaunted by Hirschfeld as a satisfactory treatment of arteriosclerosis. The effect of the hot bath on the patient suffering from arteriosclerosis is fourfold: 1. It alters the distribution of blood pressure by unloading the internal organs and by increasing the vascularization of the skin; hence, it affords prompt relief in many of the cases of pain associated with internal gout, that frequent source of arteriosclerosis. 2. It increases combustion. 3. It increases the elimination of waste products. 4. By opening the channels of the skin, it reduces the pressure of the blood by bleeding the patient into the skin. In every instance, it is necessary to ascertain exactly the reaction of the individual. One may safely begin with a temperature of 102 degrees if the patient is not above 55 or 60; in women it is safer to begin at 100 degrees. The time of immersion should not be less than ten minutes, although Hirschfeld rarely had to exceed that time. The determining factor in the management of the patient is the condition of the left heart, the quality and loudness of the first and second aortic sounds. Without a vigorous left heart the hot bath must be used with caution. Hirschfeld warns against the indiscriminate use of the hot bath when there is not a good systematic pressure and a vigorous systolic output to start with. While these two conditions obtain in arteriosclerosis, favorable results will follow the treatment indicated.

Journal of Tropical Medicine, London.

August.

32 Hemogregarine of Mammals. H. Jacuil, A. Balfour.

Presse Médicale, Paris.

33 (No. 56.) Le service des délirants de l'Hotel-Dieu (delirious patients in Paris Hospital). G. Ballet.
34 *Résection des nerfs dans la gangrène douloureuse des membres. Bardesco.
35 (No. 57.) Le traitement de la migraine et le canabis indica. G. Carron de la Carrière.
36 (No. 58.) *Inversion thermique et monothermie. A. Gilbert and P. Lereboullet.
37 *L'hémato-aspiration. G. Laurens.
38 (No. 59.) *Le diurèse par les boissons (after drinking). M. Labbé.
39 Les fausses appendicites (pseudo). J. De Nittis.
40 *Flacons aseptiques utilisés comme burette et comme seringue à injections hypodermiques.
41 (No. 60.) La crêche idéale. V. Bué.
42 *Mécanisme de l'évolution du paludisme. M. Le Ray.
43 (No. 61.) Sur les lésions métatyphiques du systeme osseux (of skeleton). A. Christides (Constantinople).
44 *Corps étrangers de l'oesophage et oesophagoscopie (foreign bodies). J. Moure.
45 (No. 62.) *Les diabètes d'origine infectieuse. M. Labbé.
46 Toxémie appendiculaire à localisation gastrique et nerveuse, nécrose suraigue de la muqueuse gastrique. M. Dupont.
47 (No. 63.) The Insane in the European Colonies in the Far East.—La condition des aliénés dans les colonies françaises, anglaises et neerlandaises d'Extrême-Orient. E. Jeanselme.
48 Tests for Horse Meat.—La recherche de la viande de cheval dans les produits manipulés de la charcuterie. H. M. Martel.
49 Report of Fifteenth French Congress of Neurology, Rennes, August 1-7.

34. **Resection of Nerves in Painful Gangrene.**—Bardesco has found it necessary to relieve the pain of gangrene of the leg before he could proceed to amputation. Stretching the nerve brought transient relief, but epidural injections of cocain were entirely useless. He finally resected the internal and external popliteal nerves for a distance of about 5 cm. The pain was arrested at once and the general health improved, the edema of foot and leg subsided and the gangrene became demarcated. The portion finally requiring amputation was much smaller than was at first supposed necessary, and the patient was spared unnecessary crippling. Recovery was rapid and complete, and no sensory or trophic symptoms have developed to date. He proposes in future merely to sever the nerve and to suture the wound. This would relieve the pain while the nerve would become regenerated later, allowing the gangrene time for elimination. These operations on the nerves enable the secondary amputation to be done under much more favorable conditions.

36. **Thermic Inversion and Monothermia.**—Gilbert applies the first of these terms to a condition in which the temperature reaches its maximum in the morning. He has coined the second term to express the condition in which the temperature remains the same morning and evening. Both are probably due to the influence of some digestive or biliary toxic infection, and are liable to be observed in almost any affection due to autoinfection.

37. **Vacuum Cleaning Applied to Operative Wounds.**—Laurens gives an illustration of his little vacuum aspirator, attached to a faucet. It works on the principle of the vacuum cleaning apparatus, sucking all the fluids and loose particles out of the wound. He has found that it reduces the length of otorhino-laryngeal operations, prevents aspiration of secretions and keeps the wound cleaner than any other measures. It does not siphon out blood, as the mouthpiece is placed over the wound only when there are secretions, blood and scraps to be aspirated, and is not kept there all the time. Of course, tamponing is necessary in some cases, but in the majority this aspiration technic is sufficient and renders the compress superfluous. The operator has always a clean field before him.

38. **Diuresis from Drinking.**—Labbé's tracings show the prompt diuresis that follows ingestion of liquids fasting. When taken with food they are not evacuated so promptly by the stomach. He suggests the term "oligoposy" to express the disturbances that result from not drinking enough fluids. It entails oliguria, irritates the kidneys, produces albuminuria and leads to gout. A large glass of any warm infusion, morning and evening, washes out the organism effectually.

40. **Burette Vials.**—The outer part of the large stopper of the vial is like a graduated inverted test tube. The male portion of the stopper is shaped like a syringe piston and its prolongation extends nearly to the floor of the vial for a delivery tube. Inside it is a loose glass plug to act as a valve. When the graduated part is fitted over the inner part of the stopper the fluid in the vial rises into the hollow inner part whenever the female part of the stopper is slightly raised. The communication between the aspirated fluid and the body of the vial is interrupted by the glass plug which serves as a valve to close the lumen of the inner part of the stopper. The fluid that has been thus aspirated into the graduated part of the stopper can then be used at will for hypodermic injection or otherwise. The tip of the outer stopper is finished so that a Pravaz needle can be screwed on it, or it is bent like a retort with a cup on the end to hold the fluid. An illustrated description of the vial is also given in the *Bulletin de l' Acad. de Méd.*, No. 30.

42. **Pathogenesis of Malaria.**—Le Ray has had long experience in the tropics and he has become convinced that the frequency, the persistence and the intensity of epidemics caused by infectious germs are determined: 1, By the degree of concentration of some miasma in the atmosphere, that is, the degree of toxicity of the gases emanating from the decomposition of some special organic matter; 2, by the evolution of the meteorologic phenomena before and during the epidemic; 3, by the degree of the physiologic fatigue experienced by the people in general and by individuals in particular. Pathogenic germs may remain a long time in a state of latent microbism, but this state is extremely unstable, depending on the relations between the nervous energy and the sum of the forces striving to break it down.

44. **Foreign Bodies in Esophagus.**—Moure preaches that radiography should be applied as the first measure in case of a foreign body in the esophagus. Blind attempts to extract the body and external esophagotomy should be very rarely attempted nowadays.

45. **Diabetes of Infectious Origin.**—Labbé's patient was a man of 45, obese, previously healthy, who had a febrile sore throat. Immediately after recovery symptoms of diabetes developed, disturbances in vision, polyuria, emaciation and elimination of 415 gm. of sugar a day. He was placed on a diabetic diet with two glasses of Vichy before meals. All symptoms of the diabetes had vanished by the end of a month, and the patient has been in perfect health during the two years since. Another patient was a woman of 67, obese at one time, but not for several years. After an acute febrile nasopharyngeal infection she likewise developed symptoms of diabetes, which also subsided after a few weeks of dieting and Vichy water. Labbé reviews the literature on the subject and remarks that the classification of diabetes as pancreatic, nervous, hepatic, etc., is illogical. The functioning of the sugar-regulating apparatus is disturbed, not any special organ in the group forming this apparatus.

Semaine Médicale, Paris.

50 (XXV, No. 30, July 26.) *Le traitement de la phlébite des membres. H. Vaquez.
51 (No. 31.) *Sudden Death in Pleurisy.—La mort inopinée chez les pleuretiques: mort subite et mort rapide. M. Roch.
52 (No. 32.) New *Prussian Law* on Communicable Diseases.—La nouvelle loi prussienne sur les maladies transmissibles. De Maurans. See foreign news columns.

50. **Treatment of Phlebitis.**—Vaquez outlines the treatment suitable for obliterating phlebitis of the large veins, for subacute venous septicemia and for recurring phlebitis. Immobilization in the former should be absolute. He does not use a cast, but holds the leg immovable by strips across it at the knee and above and below, the strips pinned firmly to the mattress. Another strip holds the foot immovable at a right angle to the leg. A strip across the lower part of the trunk is likewise pinned to the mattress or tied to the side bars of the bed. This technic allows supervision of the various parts of the limb without raising it, as would be necessary with a cast. Sedative applications at first are followed by fomentations with a natural saline water for three or four hours, the part powdered with talcum, chalk, magnesia and resorcin powder in the interim. When the temperature has been normal for twenty days, and the veins are indolent to palpation and the edema is retrogressing, then partial passive mobilization may be commenced, limited to ankle and toes. From the twenty-seventh to the thirty-fifth day the muscles may be massaged, and at this time the knee and the trunk can be released. By the fortieth day the patient can be allowed to take a few steps. An elastic stocking should not be worn at first, but merely a light bandage wound from the foot to the thigh before the patient is allowed to get up. This promotes the establishment of collateral circulation. A crutch should not be allowed, as this favors vicious attitudes. Subacute venous septicemia or multiple, relapsing phlebitis, requires different treatment, measures to combat varicose congestion and to prevent the entrance of germs into the enlarged veins. The slightest phlebitis of this nature demands rest in bed with immobilization for twenty days, followed by passive movements of the joints; the rest of the limb does not require mobilization or massage, and these measures arouse the phlebitis again. An elastic stocking is needed when the patient gets up. Surgical intervention should be reserved for protracted phlebitis with successive emboli from disintegration of the clot and danger of septicemia. It is also indicated in case of circumscribed, infected varicose ulcers. Each reawakening of the subacute venous phlebitis should be treated like a new focus, and mobilization should not be commenced until twenty days after the temperature has returned to normal. Local treatment should be the same as previously mentioned. The fomentations are especially effectual in aiding resolution in these cases, as the veins and perivenous surrounding tissue are accessible. In recurring phlebitis in gouty subjects, immobilization is still the rule, for mobilization, massage, etc., do more harm than good. Postphlebitic accidents are generally the result of absurdly long immobilization, from three to twelve months. The pain and edema are best treated by mild hydrotherapy, effleurage and electricity. Massage under hot running water acts on the trophic trouble and on the muscular atrophy common in postphlebitic edema. He asserts that this delicate but energetic treatment which he recommends for the various forms of phlebitis, effects cures without causing a train of sequelæ.

51. **Sudden Death in Pleurisy.**—In menacing death from asphyxia in pleurisy, preventive treatment should include punctures, lying on the affected side and refraining from any exertion and from drugs that may depress the respiratory functions, such as morphin. When the impending fatal termination is due to reflex inhibition, preventive treatment should aim to avoid sudden movements, exertion and constipation. Morphin should be given in case of violent cough or pains. Curative measures should comprise massage and electricity to the heart, artificial respiration, traction of the tongue and stimulation of the skin. The asphyxia is generally preceded by attacks of dyspnea and inability to lie on the sound side, cyanosis and signs of heart weakness.

Berliner klinische Wochenschrift.

53 (XLII, No. 27.) *Zur operativen Behandlung der puerperalen Pyämie. E. Bumm.
54 *Orifice vaginal et Vaginisme. P. Budin.
55 *Rupture of Cesarean Wound.—Ueber die Zerreissung der alten Kaiserschnittsnarbe bei nachfolgender Schwangerschaft. R. Werth.
56 *Myom und Menopause. Winter.
57 Medicolegal Aspect of Retained After-birth.—Schwierigkeiten bei der forensischen Begutachtung von zurückgebliebenen Nachgeburtsteilen. O. Küstner.
58 Zur Pathologie der Extrauterin-Schwangerschaft (pregnancy). M. Hofmeier.
59 Wie erreichen wir am besten das Ziel, den Uteruskrebs auf operativem Wege zu heilen? (uterine cancer). J. Pfannenstiel.
60 Albuminurie in der Gravidität und künstliche Frühgeburt. J. Veit.
61 (No. 28.) *Ueber pathologische Veränderungen und Spirochæte pallida bei congenitaler Syphilis. V. Babes and J. Panea.
62 Influence of Alkalies and Acids on Stomach Secreting Function.—Experimentelle Untersuchungen über den Einfluss von Alkalien und Säuren auf die sekretorische Funktion der Magenschleimhaut. A. Bickel.
63 *Beobachtungen über maligne Mäuse-Tumoren (on mice). P. Ehrlich and H. Apolant.
64 *Drei Fälle vaginaler Ovariotomie nach Dührssen. K. Reinecke.
65 *Vorkommen von Spirochaeten bei ulcerierten Carcinomen. E. Hoffmann.
66 *Treatment of Acute Suppurative Otitis media with Passive Congestion.—Ueber die Behandlung der acuten eitrigen Mittelohrentzündung mittels Stauungshyperämie nach Bier. Heine.

53. **Operative Treatment of Puerperal Pyemia.**—Bumm relates the histories of 5 patients with puerperal pyemia treated by ligation of the ovarian and hypogastric veins, with 3 recoveries. One was a case of acute pyemia after abortion, the others were chronic cases. His experience teaches that it is not necessary to attempt the extirpation of the uterus in case of puerperal pyemia, but merely to ligate and to resect the affected ovarian veins and to be content with simple ligature of the hypogastric veins. Applied in time, these measures are almost certain to cure. As the circulation through the parts is arrested, the suppurative thrombotic masses are no longer swept into the general circulation and the chills cease. The pus will be gradually absorbed in the tied-off portions of the veins or a local abscess may form, requiring evacuation. Abortive chills and moderate temperature, such as follow operations for sinus thrombosis, are liable to occur when the abscess is opened, but cause very little disturbance. In the acute case, the blood was being overwhelmed with infectious matters and the number of polynuclears and eosinophiles was constantly declining, but as soon as the veins were ligated, these cells rapidly increased and soon regained their normal proportions.

54. **Treatment of Vaginismus.**—Budin has cured a number of patients by stretching the entrance to the vagina under local anesthesia with vaselin containing 1.2 parts cocain to 30 parts vaselin. He accomplishes this by gradual dilatation with the vaselined fingers and the introduction of Hegar tents.

55. **Tearing Open of Old Cicatrix from Cesarean Section in Later Pregnancy.**—Werth has had an experience of this kind, and analyzes 11 similar cases in the literature. Among the points learned is the importance of preventing vigorous contractions of the uterus after the Cesarean wound has been sutured. The contractions should be reduced to the minimum, as they interfere seriously with the consolidation of the wound. The uterus should not be tamponed, on this account, unless absolutely necessary, and only to the smallest possible extent. The wound should be sutured to ensure perfect adaptation and rest and to promote healing. The diagnosis of rupture of the uterus was generally easy on account of the indications of severe internal hemorrhage, but in a few instances the general health did not seem to be much impaired, as the loss of blood was comparatively small, owing to the location of the placenta just below the old scar. This allowed the fetus and after-birth to pass at once through the rupture, and the hemorrhage was arrested by the retraction of the emptied uterus.

56. **Myoma and the Menopause.**—Winter's statistics show that the menopause did not occur until after 55 in a third of his 718 cases of myoma. Of his 437 patients under 45, only 9 were in the menopause, only 15 in 170 were between 45 and 50, while the menopause had just commenced in 37 out of 111 over the age of 50. His experience further indicates that patients with myoma are liable to serious symptoms at any time until after the menopause is fully established. Fully 17 per cent. of his patients had to submit to an operation for myoma after the age when the menopause usually commences in normal women. In 19 cases, the myoma caused disturbances necessitating an operation some time after the menopause had been fully established, but in the majority of cases the latter arrests the growth of the neoplasm, and abolishes all disturbances from it, as the myoma shares in the senile involution of the uterus. The symptoms observed from the myoma in the menopause may be due to the expulsion of a subserous myoma or to an increased tendency to sarcomatous degeneration or to hemorrhages. Myomata sometimes continue to grow after the menopause. In his patients, operations undertaken for myoma during the menopause represent 5 per cent. of a total of 392.

61. **The Spirochete and Syphilis.**—Babes and Panea found the *Spirochæte pallida* in one case of congenital syphilis almost immediately after death, congregated in the blood, lymph glands, liver and suprarenals in pure cultures. These organs were the ones that showed the syphilitic changes in the most pronounced form. In two other children with congenital syphilis, as also in this one, the syphilitic changes in the organs were more marked than in adult syphilis. No spirochetes were found in the other non-syphilitic children examined. The syphilitic infants were from one to four weeks old, and in the hemorrhagic case the blood presented peculiar leukemic findings. All the organs and tissues seemed to have suffered from the action of the syphilitic toxin. Spirochetes were found in each of the three infants, and were most numerous at the points where the syphilitic changes were most apparent.

63. **Malignant Tumors in Mice.**—Ehrlich's experiences with 164 mice inoculated with malignant tumors revealed a number of interesting points. Out of 71 primary tumors only 10 proved transmissible, but with some of these none of the inoculations were failures. In one instance a carcinoma had been inoculated through several generations when suddenly a typical, spindle-celled sarcoma developed in the carcinoma, crowding out entirely the carcinoma cells. The sarcoma was inoculated further through 26 generations without modification in its elements. Simultaneous inoculation with carcinoma and sarcoma cells resulted in the production of a mixed tumor, but in succeeding generations the carcinoma elements always predominated more and more.

64. **Vaginal Ovariotomy.**—Reinecke quotes Pozzi's remark that Dührssen's vaginal Cesarean section was the last great achievement in surgery of the nineteenth century, and adds that he regards Dührssen's vaginal celiotomy as one of the most important triumphs in gynecology which that century produced. He gives the details of 5 cases in which he performed vaginal ovariotomy with extremely favorable results. Dührssen's vaginal fixation with silkworm, below the insertion of the tube, with isolated suture of the opening in the peritoneum between bladder and uterus, is the ideal fixation, he thinks. This isolated suture of the fold of peritoneum induces seroserous union which holds the uterus in antefixation while it does not interfere with its normal enlargement during a pregnancy. The threads are not removed for six weeks. It is certain, Reinecke concludes, that the former unfavorable attitude of many gynecologists is changing to a more favorable view as experience is demonstrating the advantages and the harmlessness of Dührssen's technic.

65. **Spirochetes in Ulcerating Carcinoma.**—Hoffmann has found spirochetes in three cases of this kind, but states that the spirilla differed in several respects from the *S. pallida* found in syphilitic lesions.

66. **Artificial Hyperemia in Treatment of Otitis.**—Heine is assistant at Lucae's ear clinic at Berlin, and here relates his experience with 19 cases of acute otitis media, with and without mastoiditis, treated by Bier's method of artificially induced hyperemia. This method of seeking to cure by artificially increasing the inflammation proved successful in the cases with abscess formation, but in the others it seemed to postpone the inevitable operation, and possibly to allow the best moment for intervention to pass. Out of the 19 cases 9 patients were entirely cured, in 2 the mastoiditis has apparently subsided, and in 8 an operation had to be done later. The congestion was induced by a rubber strap around the neck, only tight enough to induce a slight cyanotic, swollen appearance in the face. It was applied at 11 a. m., left for twenty-two hours, and replaced after an interval of two hours. The patients did not seem to mind it much after the first. In one case of mastoiditis, apparently requiring immediate operation, the patient has almost entirely recovered under this congestion treatment without further intervention.

Deutsche medizinische Wochenschrift, Berlin and Leipsic.

67 (XXXI, No. 29, July 20.) *Die Therapie der Prostatahypertrophie. F. M. Oberländer.
68 *Entstehung und Wesen der Gicht (essence of gout). H. Klonka.
69 Weitere Untersuchungen über die antagonistische Wirkung normaler Sera. R. Pfeiffer and E. Friedberger.
70 Fortschrite in der Behandlung der Hautkrankheiten (progress [illegible] Klingmüller.
71 Fa[illegible] ior erfolgreich mit Röntgen-Strahlen [illegible]
72 Uc[illegible] E. Impens.
73 [illegible] schnelle Methode zur deutlichen Darstel[illegible] pallida. M. Oppenheim and O. Sachs.
74 [illegible] dage for Flat-Foot.—Zur Behandlung [illegible] fusses. G. Muskat.

67. **Treatment of Hypertrophied Prostate.**—Oberländer concludes his clinical lecture with the assertion that systematic evacuating catheterization has not only a symptomatic action, but is directly curative and generally wards off the necessity

for surgical intervention. He remarks that the proper choice of the catheter to use is the criterion of the result to be expected. Several catheters should be at hand, of from 14 to 15 Charrière and 40 cm. long. The Mercier curve is the best, not more than 130 to 150 degrees, and end in a cone rather than in an olive tip. On the slightest suspicion of a crack in the varnish the catheter should be discarded. The tip should always curve upward when being introduced. The great blunder is to catheterize at too long intervals. Four times a day generally suffices, supplemented by rinsing the bladder with a warm, saturated solution of boric acid.

68. **Essence of Gout.**—Kionka describes a number of interesting experiments on the origin and nature of gout which he has been conducting with Frey. He found degenerative processes constant in the liver and kidneys of mice fed exclusively on meat. He also noted the total absence of the glycocol-destroying, urea-forming ferment in the liver of gouty subjects. He does not believe that pathologic changes in the liver are necessary for the production of gout, but that functional disturbances must certainly exist. Functional disturbances in the liver are very liable to entail disturbances in the urea metabolism. The absence of the glycocol-destroying and urea-forming ferment in the liver may be congenital or may be the result of improper diet or of constitutional poisoning. The remedies which have proved useful in gout owe this property probably to their beneficial action on the functions of the liver. Colchicin and benzoic and salicylic acids are powerful cholagogues, and they thus improve the conditions of the circulation in the liver. This is also accomplished by certain purgatives, hydrochloric acid, etc. Benzoic, salicylic and quinic acids have a further beneficial action in that they bind the glycocol and thus prevent its exerting a precipitating action on the uric acid in the organism. The presence of glycocol with a large amount of urea entails precipitation of urates. When there is a gouty tendency, that is, a lack of glycocol-destroying ferment, urates are precipitated. This occurs in cartilage and in connective tissue when glycocol is generated in them by nutritional disturbances.

Wiener klinische Rundschau.

Last indexed, XLIV, page 1971.

75 (XIX, No. 17.) *Zur Frage der Misch-Infektion bei der Lungen-Tuberkulose. A. Pick. (Commenced in No. 15.)
76 Fall von Lungen-Hernie. S. Goldflam. (Commenced in No. 15.)
77 (No. 18.) Das Moskito-Fieber (fever). K. Steiner.
78 Dentistry in School, Army, Prison and in Sickness Insurance. —[illegible] Armee, Gefängnis und Krankenka[illegible]
79 (No. [illegible] P. Gerber.
80 Inte[illegible] F. Burger.
81 (No. [illegible]
82 *Die [illegible] ihre Behandlung (biliary lithiasis). G. Singer.
83 (No. 21.) Ueber die Einfluss der Gravidität auf die Schleimhaut des Uterus (influence on mucosa). B. Müller.
84 (No. 22.) Familiäre Enuresis nocturna. R. Stern.
85 (No. 23.) Die Amöben und die Amöbenruhr (dysentery). E. Bertarelli.
86 *Roentgen Examination of Stomach.—Die radiologische Untersuchung des Magens. G. Holzknecht and L. Brauner. (Commenced in No. 16.)
87 Beiträge zur Kenntnis der herzegowinischen Volksmedizin (medical folklore). K. Steiner. (Commenced in No. 20).

75. **Mixed Infection in Tuberculosis.**—Pick believes that mixed infection is very frequently the reason why a latent phthisis suddenly assumes a rapid, galloping form. It promotes destructive processes in the lungs, especially cavity formation, which is mainly the work of streptococci. The metabolic products resulting from mixed infection are liable also to injure the organism. The prognosis of mixed infection, therefore, differs from that of pure tuberculosis. In case of high fever, tuberculin treatment can do little, if any, good. In general treatment measures against the mixed infection are necessary, and he has seen good results from creosote and also from the salicylates in the febrile cases. When the strength permits, hydrotherapy can be used to advantage, especially packs. In case of tuberculosis of the serous membranes he states that he has derived benefit from rubbing green soap into the skin of the abdomen or breast.

79. **Infectious Idiopathic Purpura.**—Gerber reports two cases, one terminating fatally. They occurred with a brief interval in two inmates of the same house.

81. **Appendicitis.**—Clemm regards the appendix as a necessary reservoir for the intestinal bacteria, and hence does not favor its removal without great cause. He agrees with Robin that fully 98 per cent. of the cases of appendicitis terminate in recovery without appendicectomy. In treatment he advises rest on a hard mattress, with applications of heat to the part to soothe the inflammation and to help move the bowels. A hot sand bag or thermophore is placed under the part and a hot, soft linseed poultice is placed over it or a light thermophore. The patient is coaxed to take frequent swallows of hot Carlsbad water or physiologic salt solution, as hot as possible. No opium, purgatives or ice are used. After several hours the hot applications are suspended and a tablespoonful of green soap is worked into the skin, after which an alcohol compress is applied. No food is allowed for two days. Rapid recovery is the rule under this treatment in recent cases. The physician should continue his oversight of the case, with massage of the parts with his own hands, for weeks, and surveillance of the stools, supplemented by an adhesive-plaster supporting bandage and later a good truss, strengthening the muscles by appropriate exercise. Treatment on these principles will rob this dreaded disease of all its terrors, he affirms.

82. **Treatment of Cholelithiasis.**—Singer has been remarkably pleased with the results of olive oil in treatment of gallstones. In one of his cases a woman passed 52 gallstones, some as large as a cherry, under treatment with pure olive oil. He begins with one and increases to four or five tablespoonfuls a day, taken fasting, and followed by a small glass of warm Carlsbad water. Some patients overcome a repugnance to the taste by rinsing the mouth before and after with brandy or some alcoholic aromatic mixture. The oil can also be given in the form of a flavored emulsion. He sometimes uses an alkaline oleate in place of the oil, but has never had such success with it as with the olive oil. He generally advises gallstone patients to eat abundance of butter.

86. **Roentgen Examination of the Stomach.**—Holzknecht and Brauner add twenty-nine illustrations to their article emphasizing the value of the information that can be derived from Roentgen examination of the stomach after ingestion of a solution of bismuth. The fluid settles in the cracks and around the outside of a tumor and thus throws it into relief in the skiagram. The bismuth also outlines the stomach as the patient assumes various positions. No bougie or stomach tube is required. The views are taken standing and reclining, and during inspiration and expiration, the most important information being generally obtained by radioscopy. The findings are characteristic for the fasting stomach, and also for the stomach weighed down by a meal containing 500 gm. of food or inflated with gas. The size of the stomach and its relations to other organs can thus be accurately determined. The passage of a bismuth tablet into the stomach can be traced and its expulsion watched. The action of massage on the stomach can also be studied in this way, and the displacement of the organ during respiration. The diagnosis of cancer or hour-glass stomach is an easy matter by this means, and it also allows undisturbed supervision of the stomach peristalsis. To examine the standing patient the Roentgen tube and the fluorescent screen are suspended by weights from a wooden standard, parallel to each other. The patient swallows a tablet of bismuth and, after its course has been traced, drinks 50 gm. of water into which 10 gm. of bismuth have been stirred. After the findings of this test have been noted he drinks a mixture of 4 gm. tartaric acid and 5 gm. sodium bicarbonate. This stirs up the bismuth in the stomach and gives very interesting findings, after which the patient reclines and the findings in various positions are noted. The test on the following day consists of ingestion of 400 gm. of milk gruel containing 35 gm. bismuth. The patient takes this while reclining on the left side, with the Roentgen tube at his back, and he is then examined when lying on the right side and on his back. Specimens of the views thus obtained are reproduced.

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Last indexed XLIV, page 1890.

88 (LVII, Nos. 1-2.) *Ueber den osmotischen Druck menschlicher [illegible] und seine Beziehung zum Kochsalzge[illegible]sure of stomach content). H. Strauss.
89 * [illegible]lutes mit Proteusbazillen und Strepto[illegible], zugleich ein Beitrag zur Frage der Mitagglutina-

tion von Typhusbazillen bei Proteusinfektion. G. Jochmann.
90 *Studien über Nephritis. F. Erben.
91 Duplicated and Accessory Heart Sounds on Direct Auscultation of Heart.—Ueber die verdoppelten und akzessorischen Herztöne bei unmittelbarer Auskultation des Herzens. W. P. Obrastzow.
92 *Ueber die spinale Lokalisation der motorischen Funktionen. P. Lazarus.
93 *Tierexperimentelle Studien über Blutdruckmessungen mittels des Riva-Rocci 'schen Sphygmomanometers. B. Fellner and C. Rüdinger.
94 *Ueber die Bedeutung der anorganischen Salze im Stoffwechsel des Organismus. A. Hirschler and P. Terray.
95 *Ueber den Einfluss von Alkalien auf den Säuregrad des Harnes bei Anämien (alkalies and acidity of urine). S. v. Moraczewski.

88. Osmotic Tension of Stomach Content and Its Relation to the Proportion of Salt.—Strauss has been studying this subject for five years. The proportion of salt in the stomach content was found generally no higher than that of the blood. The secretory behavior of the stomach is of great import in respect to the proportion of chlorin in the stomach content, as it determines the amount of dilution of the solution isotonic with the blood. In case of defective secretory functioning there is little or no dilution, and hence the proportion of chlorin is abnormally high. In hyperacidity the secretion may be watery or concentrated. Admixture of saliva probably cooperates in causing the stomach content to be isotonic with the blood, but *it can not be the sole cause.*

89. Agglutination of Typhoid Bacilli in Proteus Infection.—Jochmann describes a case of otogenic general sepsis in which streptococci and proteus bacilli were cultivated from the blood. The serum had marked agglutinating action on typhoid bacilli as well as on the proteus.

90. Studies on Nephritis.—In this second installment Erben gives the details of chemical and other researches on the blood serum in 8 cases of contracted kidney and analyzes previous literature on the subject. He states that in parenchymatous nephritis, the proportion of globulin to albumin in the blood alters in favor of the former. The existing amyloidosis in some cases does not seem to change the quite constant composition of the red corpuscles, but it alters the composition of the serum and the relations between the corpuscles and the plasma. The increase in the extractive substances is due to the uremia.

92. Spinal Localization of Motor Functions.—Lazarus presents an array of data to prove that each anterior spinal root is a spinal center for certain combined muscle functions, several muscles working in synergy. These motor centers in the spine are localized the same as the centers in the cortex. Among the facts which he cites is the persistence of co-ordinated respiratory movements in animals after removal of the brain. He gives the localization by segments of the various motor functions in question, movements of head, neck, shoulder, trunk, etc., and the corresponding muscle groups and their centers in the spinal segments.

93. Comparative Tests of Blood Pressure Measurements.—The findings with the Hürthle tonograph and other instruments compared with those of the Riva-Rocci sphygmomanometer always paralleled each other in respect to the pulse pressure, that is, the difference between the minimum and maximum blood pressure, and the blood pressure quotient was found almost identical with each instrument. The sphygmomanometer is thus able to substitute the more complicated processes of determining the blood pressure in animals with a cannula.

94. Importance of Inorganic Salts in Metabolism.—Dogs were fed on a determined diet and the elimination of the waste carefully studied. The results indicate that it makes a great difference in what form the inorganic salts are ingested in respect to their assimilation. When phosphorus is given in the form of yolk of egg, the nitrogenous elements of the body make more rapid growth than when it is given in any other form. The yolk probably owes this property to its lecithin. This exhaustive research, therefore, scientifically confirms the general opinion in regard to the nourishig properties of yolks of eggs, and their early adaptability for the diet of children. A case of chronic deforming endocarditis was also studied from the point of view of the metabolism on various diets. The extensive work was done under a grant for scientific research, and presents a résumé of previous work in this line by various authors.

95. Influence of Alkalies on Degree of Acidity of Urine in Anemia.—Sodium citrate and sodium bicarbonate are able to render the urine alkaline in anemia. In some instances, however, especially in cases in which there is enlargement of the liver, this alkalinizing action is retarded for several days. On suspension of the alkali the urine becomes excessively acid, with increased secretion of ammonia and oxalic acid. Anemias without enlargement of the liver are accompanied by normal relations between the nitrogenized elements.

Riforma Medica, Palermo and Naples.

Last indexed page 363.

96 (XXI, No. 22.) Hydrocarbonate Metabolism.—Sul ricambio degli idrati di carbonio. L. Ferrannini.
97 *Protecting Functions of Omentum.—Nuove ricerche sulla funzione protettiva dell' epiploon. E. Cioffi.
98 (No. 23.) Note di semeiotica fisica relative alla presenza contemporanea di gas e di liquido nella pleura. G. Boeri.
99 *Intravenous Route for Drugs Acting on the Medulla.—La via endovenosa per i farmaci ad azione bulbare (caffeina, strichnina). L. Ferrannini.
100 (No. 24.) Nevrite ascendente da pneumococco del Fränkel. D. Pirrone.
101 *Studii sulle leucemie e pseudoleucemie. F. Schupfer. (Commenced in No. 22.)
102 Bilharzia Eggs in Feces.—La ricerca delle uova di Bilarzia nelle urine e nelle feci. T. Mazzei.

97. Protecting Functions of Omentum.—The protecting action of the omentum has been demonstrated by Cioffi's researches, not only for the spleen and kidney, but also for the liver, suprarenal capsules and intestines. If the vessels of the spleen are tied off and the omentum removed, the animal dies in twenty-four hours, while it survives longer if the omentum is left intact. If a flap of the liver is loosely tied off, the omentum covers and clings to it, with the result that a protecting capsule forms, with congregation of leucocytes and especially phagocytes. During this period of absorption of liver, spleen or other tissue, the kidney behaves in the same way as if organic nucleoproteids were being injected, that is, the secretory apparatus shows changes and there is parenchymatous hemorrhage. The protecting action of the omentum is promptest and most marked in case of lesions of the intestine.

99. Intravenous Route for Caffein and Strychnin.—Ferrannini's experimental researches have demonstrated that the drugs acting on the medulla can be administered intravenously in case of emergency.

101. Research on Leukemia and Pseudoleukemia.—Schupfer's article issues from Baccelli's clinic at Rome. He is convinced that leukemia has no analogy with ordinary infectious diseases, but is more in the nature of a systematic sarcomatosis of the lymph and blood producing organs. To demolish completely the idea that leukemia can be due to any ordinary micro-organisms and that they circulate in the blood, he injected cancer patients with blood from some patients with leukemia. The possible beneficial effect of an intercurrent infection justified the attempt, but the results were entirely negative, as they were in similar experiments on animals. These results, he thinks, disprove the possibility of an ordinary infectious agent, as cancer patients are peculiarly susceptible to mixed infections. Further experiments with inoculation of leukemic tissue, he thinks, have fully confirmed the assumption that leukemia is a sarcomatosis.

Books Received

Acknowledgment of all books received will be made in this column and this will be deemed by us a full equivalent to those sending them. A selection from these volumes will be made for review, as dictated by their merits, or in the interests of our readers.

Sanitary Reports for Mexico for the years 1901 to 1904, Inclusive. Paper. City of Mexico.

Amerikanische Streiflichter von Carl Beck. Cloth. Pp. 246. Berlin, SW., 48; Verlag von Leonhard Simon NF., 1905.

Twenty-Eighth Annual Report of the Board of Health of the State of New Jersey and Report of the Bureau of Vital Statistics, 1904. Cloth. Pp. 494. Paterson, N. J.: News Printing Co., 1905.

Therapeutics, Its Principles and Practice. H. C. Wood, M.D., LL.D. Twelfth edition. Thoroughly Revised and Adapted to the Eighth (1905) Edition of the United States Pharmacopeia. H. C. Wood and H. C. Wood, Jr., M.D. Cloth. Pp. 907. Price $5.00 net. Philadelphia: J. B. Lippincott Co., 1905.

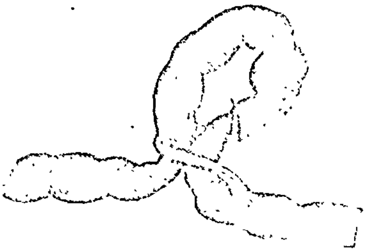

Fig. 1.—Diverticulum wrapped around gut, producing obstruction —Cazin—Rep. by Halstead, Annals Surg., vol. xxxv, p. 471.

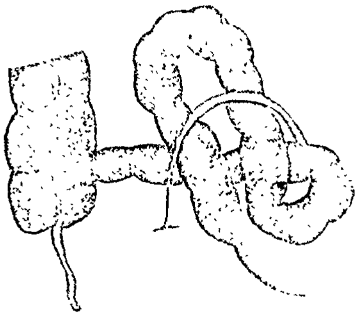

Fig. 2.—Diverticulum acting as band. Distal end adherent to posterior abdominal wall. Loop of gut incarcerated.

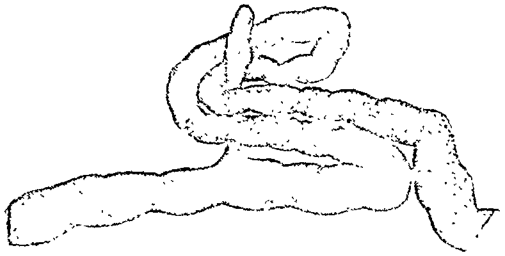

Fig. 3.—Diverticulum surrounded by adherent gut producing obstruction. (Tyffany—Personal communication.)

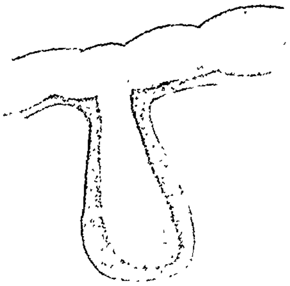

Fig. 4.—Diverticulum sole content of hernial sac, Benevolis case, Rep. by Bunts, Annals Surg., October, 1904.

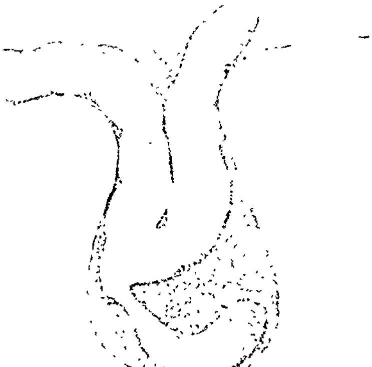

Fig. 5.—Diverticulum and intestine in hernia. Several cases (similar) reported.

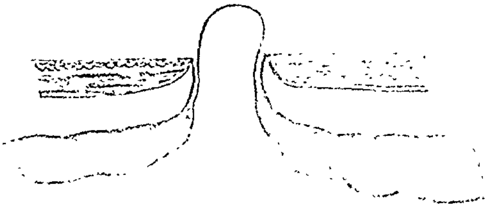

Fig. 6.—Diverticulum patent at umbilicus with protrusion of posterior wall of gut.

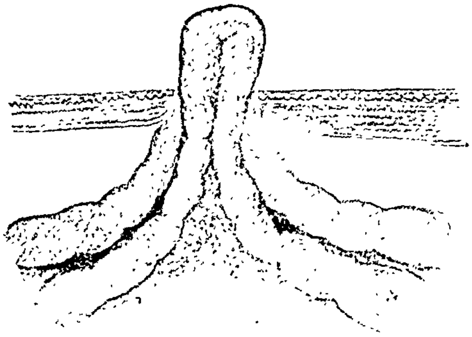

Fig. 7.—Same as Fig. 6, with hernia.

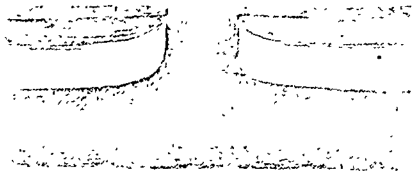

Fig 8.—Large diverticulum patulous at umbilicus.

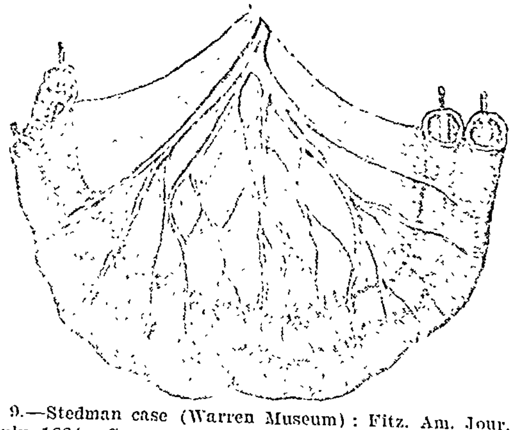

Fig. 9.—Stedman case (Warren Museum): Fitz. Am. Jour. Med. Sci., July, 1884. Symptoms of bowel obstruction for 4 or 5 days.

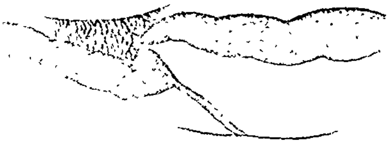

Fig. 10.—Obstruction by traction. Angulation at mesenteric attachment. Diverticulum attached to mesentery. Boyer's case, personal letter.

Supplement to
The Journal of the American Medical Association.

Illustrating Article by Dr. Porter.

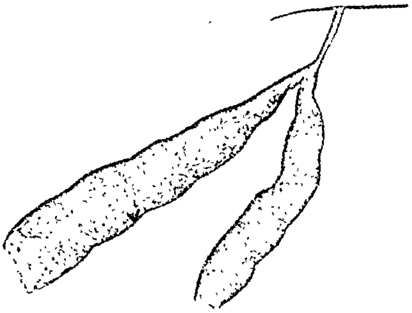

Fig. 11.—Obstruction by traction. Angulation at attachment of diverticulum.

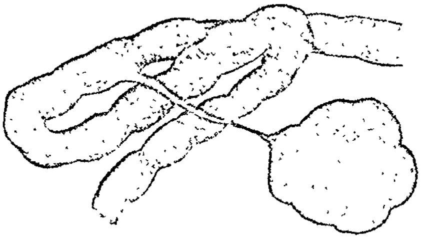

Fig. 12.—Diverticulum with cyst. Weight of cyst producing strangulation and obstruction of bowel. (Mayer and Lee, Am. Jour. Med. Sci., March, 1905.)

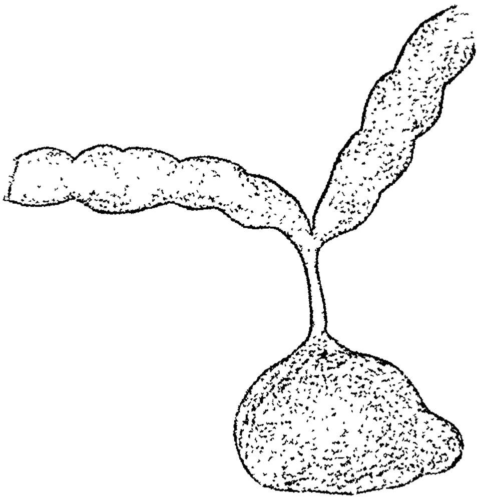

Fig. 13.—Cyst of diverticulum producing obstruction by traction. Walzberge's case (Halstead).

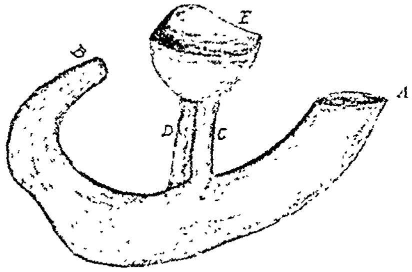

Fig. 14.—A, Upper part of bowel; B, diverticulum pulled out; C, narrow tube connecting upper and lower part of bowel; D, mesentery; E, lower part of bowel.

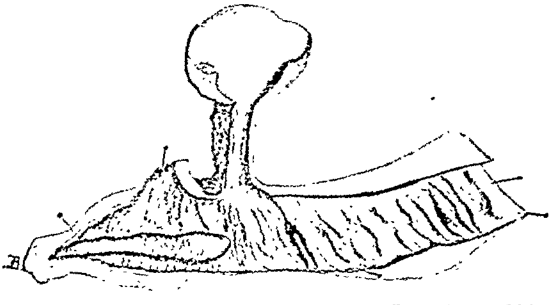

Fig. 15.—Cheyne's case, Annals Surgery, December, 1904. B, diverticulum inverted.

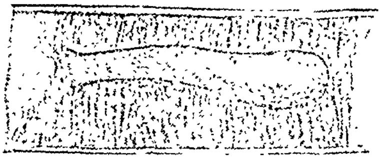

Fig. 16.—Invagination of diverticulum, Heller's case, Rep. by Watson Cheyne, Annals Surg., Dec., 1904.

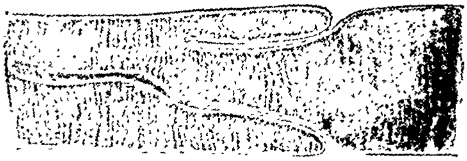

Fig. 17.—Invagination of diverticulum dragging bowel after it. Author's case.

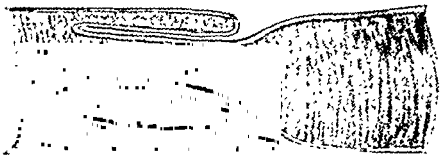

Fig. 18.—Invagination of bowel. Diverticulum dragged in, but not inverted (Stubenrauch's case, Rep. by Halstead, Annals Surg., vol. xxxv, p. 489.)

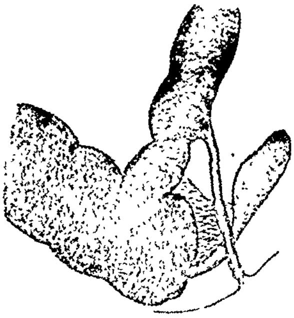

Fig. 19.—Appendix strangulated by diverticulum acting as band. McArthur's case (Halstead).

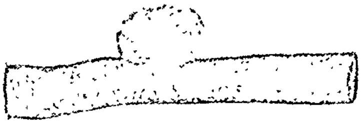

Fig. 20.—Author's case, seen after this paper was written. Causing no trouble. Obstruction due to adhesions. Post appendiceal.

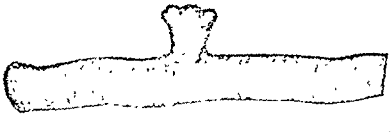

Fig. 21.—Author's case, seen in gunshot wound of bowel, walls of diverticulum very thin.

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Original Articles

ABDOMINAL CRISES CAUSED BY MECKEL'S DIVERTICULUM.*

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FORT WAYNE, IND.

Within a period of two months during the latter part of the last year, there occurred in my practice four cases of Meckel's diverticulum.[1] In one of these cases, the diverticulum was the source of no trouble, but was met with during an operation for gunshot wound of the bowels. In the three other cases, the diverticulum was the occasion for the operation. This unusual experience aroused my interest in the subject and occasioned my determination to write the paper herewith presented.

The basis of the paper consists of my personal experience, a study of the literature of the subject and an analysis of the reports of 184 cases which I have tabulated and which includes 35 cases not hitherto reported. It is, of course, not pretended that this list is complete, but it comprises all the cases I could find in the literature available that were reported sufficiently in detail to fulfill my purpose in the study of the subject. Abstracts of many other cases were found, but they were too meager of detail to make their report worth while.

My purpose is to add, if possible, a little to the practical side of our knowledge on this subject, and therefore no attempt will be made in the direction of an exhaustive study of the embryologic, anatomic and pathologic phases of it. It is sufficient for our purpose to know that what we call Meckel's diverticulum is a fetal remnant of the intestinal tract, which in the normal course of events disappears by involution before birth; that because of an arrest of development it may remain as a patulous duct connecting the intestinal tract with the outer world via the umbilicus, or as a blind sac or cord connected to the umbilicus or to any other part of the abdominal walls or to any of the abdominal organs, or as a cul-de-sac unattached save at its origin; that it may have its origin in any part of the intestinal tract, but usually arises from the ileum[2]; that it may arise from any part of the circumference of the bowel, but usually arises opposite the mesenteric attachment; that histologically it agrees with the intestine, save in those cases wherein the involution has proceeded to such an extent as to leave only blood vessels and connective tissue.

Meckel's diverticulum is probably present in from 1 to 2 per cent. of all individuals. It is said by Halstead to be the cause of intestinal obstruction in 6 per cent. of all cases.[3] In my own list of 184 cases it caused obstruction by band in 101 cases; volvulus, intussusception, diverticulitis and other crises in 83 cases. The average age at which crises occurred, according to my table, is 21 years and 2 months, and yet this includes 6 patients over 50, 1 being 81 years of age. Judging from these facts, we are warranted in concluding that, in proportion to the frequency of its presence, Meckel's diverticulum is one of the most frequent sources of grave abdominal trouble, and, therefore, not as Kelynack and others think, of slight practical importance. A Meckel's diverticulum is a greater menace to life than is an appendix vermiformis.

A study of the different ways in which the diverticulum causes trouble is of much importance. From the list of cases here presented we find that it has caused obstruction of the bowel by a band (Figs. 1, 2, 3) in 101 cases, been the cause of volvulus in 8 cases, and of intussusception in 20 cases. Diverticulitis was the cause of the crisis in 17 cases, prolapse of the bowel through a patent diverticulum in 2 cases, typhoid perforation in 5 cases, traumatic perforation in 1 case, and tubercular ulceration in 2 cases. In the 21 cases of hernia reported in this paper, the diverticulum was the cause of the trouble demanding immediate operation in all but one (Figs. 4, 5); in that one it was simply noted as forming the content of the sac. The diverticulum is more often found in umbilical than in any other variety of hernia (Figs. 6, 7), and not infrequently it is found in congenital inguinal hernia, as pointed out by Bunts.[4] It may form the only content of the sac, a true hernia of the diverticulum, or it may occupy the sac in connection with other structures. That the existence in a hernia of a diverticulum adds materially to the danger of the case seems quite evident. Maylard,[5] quoting Hudson, mentions stricture of the gut from excessive obliteration of the diverticulum, but I found no other similar case reported, although Watson Cheyne[6] and others cite cases wherein stricture of the bowel has resulted from pathologic changes secondary to intussusception and other trouble originating in a diverticulum (Fig. 8). Fitz[7] in his paper cites cases of intramesenteric *diverticulum* (*Fig. 9*), and accounts for duplication of the intestine by the blind extremity of the diverticula thus located becoming attached to the intestinal wall, at which point communication is established by perforation (Figs. 10, 11). He also mentions the rare occurrence of branched diverticula cysts of the diverticulum form, and, in a few instances, have been the cause of the crisis. In one case in the list (Figs. 12, 13), the cyst produced volvulus, in one obstruction and gangrene of the bowel by traction, and in another the weight of a cyst developed in the free end of the diverticulum dragged it over a loop of bowel producing obstruction. In one case reported by Beach[8] the occasion for the operation was a pelvic tumor which proved to be a diverticulum filled with dried fecal matter.

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* Read in the Section on Surgery and Anatomy of the American Medical Association, at the Fifty-sixth Annual Session, July, 1905.

[1] Since this paper was written a fifth case has occurred in my practice. It was met *during* an operation for obstruction of the bowels and was causing no trouble. See illustration.

[2] The name *diverticulum ilei* indicates that the origin of the diverticulum is always the ileum and is therefore incorrect.

[3] Annals of Surgery, vol. 35, p. 471.

[4] Ann. of Surg., Oct. 1904.

[5] Surgery of the Alimentary Canal, p. 471.

[6] Ann. of Surg., Dec., 1904.

[7] Am. Jour. of Med. Sciences, July, 1884.

In 5 cases the diverticulum was patent at the umbilicus. If the opening be large, the gut wall may prolapse and form the outer covering or sac of a hernia. Some of the numerous pathologic conditions produced and shapes assumed by Meckel's diverticulum, which have been observed, are herewith illustrated for the sake of clearness and brevity (Figs. 14, 15). To know the various locations, forms, attachments and pathologic changes which diverticula may present is important, in that the surgeon thus informed is in a sense forearmed. The most practical deduction from these facts seems to me to be, that, in the vast majority of cases of abdominal trouble due to Meckel's diverticulum, the trouble manifests itself primarily as a peritonitis or as an obstruction with or without strangulation (Figs. 16, 17, 18). The obstruction may be complete or incomplete throughout; or incomplete obstruction may be succeeded by complete obstruction. Symptoms of acute obstruction were manifest from the start in 118 cases. Incomplete obstruction was present throughout in 7 cases. In 17 cases there had been previous attacks of incomplete obstruction prior to the final attack of acute complete obstruction. In 20 cases, the symptoms were those of peritonitis, either circumscribed or general. In many cases the trouble was diagnosticated as appendicitis (Fig. 19), and in 1 case appendicitis existed as a complication in a case of strangulation of the bowel by the diverticulum, and in another (McArthur[9]) the appendix was gangrenous because of strangulation by a diverticulum acting as a band, the diverticulum itself being healthy. In cases of supposed appendicitis in which the conditions of the appendix when seen does not account for the symptoms, the probability of the existence of a diverticulitis should be borne in mind (Fig. 20). This point is illustrated in Keefe's case, in which a diagnosis of appendicitis had been made and on opening the abdomen the appendix was found adherent, but showing no evidence of recent inflammation. A further search revealed a mass of intestine adherent to a Meckel's diverticulum and producing obstruction. The adhesions were released and the diverticulum inverted. The patient recovered.

As in obstruction and strangulation of the bowel from other causes, so in those due to a diverticulum acting in a mechanical way, the symptoms of obstruction and strangulation are often followed by, or have added, symptoms of infection, i. e., peritonitis. In many cases the primary trouble is a diverticulitis with a subsequent formation of adhesions leading to obstruction. In these cases, of course, the symptoms of obstruction are preceded by symptoms of infection. In this class of cases the symptoms are very like those of appendicitis and this is the diagnosis usually made prior to operation.[10]

Of the cases here reported, the proportion of males to females is more than three to one, and the average age, as above stated, is 21 years and 2 months, so that while trauma is mentioned infrequently as an etiologic factor in the production of these crises, yet it would seem that the proponderance of males and the active period of life during which most cases occur would point to injury as among important causes (Fig. 21).

Oderfeld's case, reported by Halstead,[9] is the only one found in which a diagnosis was made prior to the operation. Just how the diagnosis was arrived at in this case does not appear quite clear.

As noted above, the symptoms arising in the crises due to Meckel's diverticulum, barring those patulous at the umbilicus, are in no way distinctive, but are similar to those met with in obstruction of the bowel by bands, in volvulus, in intussusception, in perforation and in appendicitis, etc., and hence a positive diagnosis without opening the abdomen is impossible, save in rare instances. An exact diagnosis, however, is not necessary before operating and to wait for it is neither good sense nor good surgery. All that is necessary before operating in these, as in similar cases, is what might be well termed a working diagnosis, and to wait for anything more is to sacrifice life. The frightful mortality which obtains in the cases under consideration, may be almost entirely attributed to delay in surgical interference. It seems to me that one of the most useful purposes that the reports appended can serve, is to emphasize the fact, well known among surgeons, that delay in operating is the most fruitful source of mortality and morbidity in surgical diseases.

In this list of 184 cases, the mortality is in all 60 per cent. Of all those patients operated on, the mortality is 50 per cent. While in the cases in which diagnoses of strangulated hernia and appendicitis were made, and in which, therefore, the patients were operated on early, as is the rule in these conditions, the mortality is 10 per cent. Words might preach a more eloquent sermon against delay in surgical intervention, but not a more powerful one.

To cover the subject of the operative technic would be to cover the subject as it concerns numerous pathologic conditions, the operative technic of which has been fully discussed. It is only necessary, therefore, to speak of the disposition of the diverticulum itself. To me it seems much better to excise it than to invert it. To invert it would mean partially to obstruct the lumen of the bowel, nor does it seem to me far-fetched to suppose that this disposition of it would invite ulceration invagination and perforation of the bowel.

After excision of the diverticulum the treatment of the opening will depend on the size of it and its relation to the lumen of the gut. When the opening is small, a single purse-string suture is simple, safe and sufficient; in other cases, Lembert sutures will be better; and in still others a portion of the bowel, including the diverticulum, will have to be removed to avoid stricture.

In conclusion I want to urge the advisability of removing all diverticula that are found in the course of abdominal operations, whether they have been or are the source of the trouble or not, provided the exigencies of the case in hand do not contraindicate further operative procedure.

SUMMARY OF TABULATED CASES.

Number of cases herewith reported for the first time, 35; total number of cases reported, 184; deaths, 93; recoveries, 67; results not stated, 24.

Patients operated on, 139; deaths, 65; recoveries, 65, result not stated, 9.

Patients not operated on, 18; deaths, 18.

Cases in which treatment is not mentioned, 27.

Kind of crisis: hernia, 21 cases; umbilical, 10; inguinal, 8; scrotal, 2; result not stated, 1.

Patients with hernia operated on, 11; recoveries, 6; deaths, 4; result not stated, 1.

Patients with hernia not operated on, 5; deaths, 5. Cases of hernia in which treatment is not stated, 5.

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[8] Ann. of Surg., vol. 24, p. 484.

[9] Cited by Halstead, Ann. of Surg., vol. 35, p. 492.

[10] Erdmann: The Journal A. M. A., Jan 21, 1905, p. 171.

Obstruction by band, 101 cases. Place of attachment of diverticulum, mesentery, 29; umbilicus, 22; free band about intestine, 9; to intestine, 11; brim of pelvis, 3; internal ring, 1; omentum, 1; diverticulum free, and acting as cyst, 2; stump of appendix, 1; mesorectum, 1; caught in loop of small intestine, 2; abdominal wall, 3; as band, place of attachment not stated, 16.

Volvulus, 8 cases; patients operated on, 7; deaths, 4; recoveries, 2; treatment not mentioned, 1

Intussusception, cases, 20; of bowel, 10; of diverticulum, 6; of bowel and diverticulum, 4. Patients operated on, 13; deaths, 8; recoveries, 5. Patients not operated on, 7; deaths, 4; result not stated, 3.

Patent at umbilicus, cases, 5; Patients operated on, 4; recoveries, 4; treatment not mentioned, 1; deaths, 1.

Diverticulitis, cases, 17; gangrenous, 6; deaths, 4; recoveries, 2. Due to presence of foreign body, 8; deaths, 7; result not stated, 1. Diverticulitis due to other causes, cases, 3. Number of cases of diverticulitis in which general peritonitis resulted, 8.

Perforation in typhoid, cases, 5; deaths, 5. Perforation from trauma, cases, 1; result not stated

Tubercular ulceration of diverticulum, cases, 2; deaths, 1; recoveries, 1.

Prolapse of bowel, cases, 2; deaths, 2.

Pelvic tumor, 1 case; recovery, 1.

Rupture of diverticulum causing obstruction from pressure of abscess, 1 case; result not stated. Summary: Males, 100; females, 30. Number of ages given, 137; result not stated, 54. Average age, 21 years, two months.

REPORTED CASES.

Case 1.—Dowse: (Cited from Bunts, *Ann. of Surg.*, Oct., 1904.) Female, aged 27. Kind of crisis, direct inguinal hernia. Symptoms, a fecal fistula had formed owing to the collection of fecal matter in the diverticulum. Treatment, patient not operated on. Result, death. Remarks: At postmortem right direct inguinal hernia was found, in the sac of which the diverticulum was found adherent to the anterior wall of the sac. The diverticulum was ulcerated and perforated owing to accumulation of fecal matter within it, thus forming fistula in right groin.

Case 2.—Mueller: (Cited from Bunts, *Ann. of Surg.*, Oct. 1904.) Fetus, aged 8 months. Kind of crisis, umbilical hernia. The child was born dead, having umbilical hernia, the sac of which contained an adherent diverticulum.

Case 3.—Ahlfeld: (Cited from Bunts, *Ann. of Surg.*, Oct., 1904.) Female, aged a few days. Kind of crisis, umbilical hernia. The child was born slightly prematurely, having an umbilical hernia, the sac of which contained a diverticulum two inches long, adherent to the umbilical ring. The child lived but a few days after birth.

Case 4.—Braus: (Cited from Bunts, *Ann. of Surg.*, Oct., 1904.) Age, 7. Kind of crisis, umbilical hernia. Treatment, laparotomy; the diverticulum was excised. Result, not stated. Remarks: Tumor at umbilicus, on being opened revealed a diverticulum as the only content.

Case 5.—Gluck: (Cited from Bunts, *Ann. of Surg.*, Oct., 1904.) Fetus born at 7 months. Kind of [illegible] symptoms consisted of signs of [illegible] Treatment, radical operation for [illegible] excised. Result, not stated. Rema[illegible] cessory mesenteric fold was found b[illegible] over the intestine.

Case 6.—Dunchamp: (Cited from Bunts, *Ann. of Surg.*, Oct., 1904.) Age and sex not stated. Kind of crisis, umbilical hernia. Remarks: Umbilical hernia with thin covering, reducible, covering burst and the contents including a diverticulum flowed out.

Case 7.—Rosenblaum: (Cited from Bunts, *Ann. of Surg.*, Oct. 1904.) Age and sex not stated. Kind of crisis, umbilical hernia. Remarks: A Meckel's diverticulum was found during a radical operation for hernia.

Case 8.—Hallet. (Cited from Bunts, *Ann. of Surg.*, Oct. 1904.) Female, aged 2 hours. Kind of crisis, umbilical hernia. Treatment, laparotomy; the diverticulum was excised. Result, not stated. Remarks. Operation revealed the contents of the sac to be cecum, small intestine and a diverticulum.

Case 9.—Tiedeman: (Cited from Bunts, *Ann. of Surg.*, Oct., 1904.) Child born at full term, few hours old. Kind of crisis, umbilical hernia. Remarks: On opening the hernial sac it was found full of yellowish fluid and communicating with the lumen of the intestine. Tiedeman thought this a true umbilical vesicle, but Roth regarded it as an enterocyst.

Case 10.—Carle: (Cited from Bunts, *Ann. of Surg.*, Oct., 1904.) Age and sex not stated. Kind of crisis, umbilical hernia. Treatment, operation. Result not stated. Remarks: Umbilical tumor, hernia of Meckel's diverticulum was diagnosticated. Operation showed the sac to contain a small tumor pierced at the summit, out of which fecal matter exuded.

Case 11.—Benevoll: (Cited from Bunts, *Ann. of Surg.*, Oct., 1904.) Age, not stated, male. Kind of crisis, scrotal hernia. The symptoms were th[illegible] Treatment, no operation. Result, death. [illegible] revealed a diverticulum extending into t[illegible] below the attachment not of a natural color.

Case 12.—Morgagni: (Cited from Bunts, *Ann. of Surg.*, Oct., 1905.) Male, aged 50. Kind of crisis, inguinal hernia. The symptoms were those of strangulation. Treatment, no operation. Result, death. Remarks: Postmortem revealed small process or diverticulum given off of the small intestine as it crossed the internal ring. The incarceration caused the obstruction.

Case 13.—Littre: (Cited from Bunts, *Ann. of Surg.*, Oct., 1904.) Male, aged 48. Kind of crisis, scrotal hernia. Remarks: Diverticulum was found in the hernial sac.

Case 14.—Thompson: (Cited by Bunts, *Ann. of Surg.*, Oct., 1904.) Male, aged 50. Kind of crisis, inguinal hernia. Symptoms, the patient had some trouble occasionally with hernia. After prolonged attempt at reduction of the hernia, lasting about three hours, reduction was finally accomplished. The same night the patient showed symptoms of peritonitis and strangulation. Treatment, laparotomy. Result, death. Remarks: On opening the belly the cavity was found full of fecal matter and fluid. No perforation could be found in small intestine at operation. At autopsy a Meckel's diverticulum was found perforated at tip, and showing evidence of adhesion probably to sac of hernia.

Case 15.—Dungan: (Cited from Bunts, *Ann. of Surg.*, Oct., 1904.) Child, male. Kind of crisis, inguinal hernia. The symptoms were those of strangulation. Treatment, laparotomy; the diverticulum was excised. Result, recovery. Remarks: The hernial sac contained coils of small intestine with a diverticulum wedged between them at the neck of the sac, making reduction by taxis impossible.

Case 16.—Banks: (Cited from Bunts, *Ann. of Surg.*, Oct., 1904.) Age and sex not stated. Kind of crisis, hernia variety not stated. Character of symptoms not noted. Treatment, laparotomy; the diverticulum was excised with portion of small bowel. Result not stated. Remarks: The diverticulum is mentioned as being part of the contents of hernial sac.

Case 17.—Webster: (Cited from Bunts, *Ann. of Surg.*, Oct., 1904).) Female, aged 42. Kind of crisis, inguinal hernia. The symptoms were those of acute and complete strangulation. Treatment, laparotomy; the diverticulum was excised; Lembert sutures were used. Result, recovery. Remarks: The diverticulum had a well-defined lumen densely adherent in canal.

Case 18.—Buntz: (*Ann. of Surg.*, Oct., 1904). Male, aged 23. Kind of crisis, inguinal hernia. The symptoms were those of partial obstruction. Treatment, laparotomy; the diverticulum with portion of small intestine was resected, union by Murphy button. Result, recovery. Remarks: On opening the sac, a knuckle of constricted diverticulum was revealed. The diverticulum was gangrenous and the intestine was also gangrenous at point of origin of the diverticulum.

Case 19.—Karajan: (*Wiener klin. Wochft.*, 1901.) Male, aged 30. Kind of crisis, inguinal hernia. The symptoms were those of comp[illegible] ment, laparotomy; the diverticulum was [illegible] y. Remarks: The diverticulum was found [illegible] of the hernial sac. By this position it hel[illegible] small intestine in the sac.

Ca[illegible] (Personal communication.) Male, aged [illegible] were those of complete obstruction. Treat[illegible] for hernia. Result, recovery. Remarks: The diverticulum formed the content of the sac.

Case 21.—Moore: (The Journal A. M. A., Oct. 4, 1904.) Child, aged seven months. Kind of crisis, umbilical hernia: Symptoms, the child was weak, constantly crying and straining. Treatment, laparotomy; the hole in the tip of [illegible] with Lembert suture; the diverticulum [illegible] rwise because of condition of patient. [illegible] Umbilical protuberance w[illegible] up to the time of operation. Operation [illegible] as content of sac.

Case 22.—Jos. Bry[illegible] Surg. Soc., *Ann. of Surg.*, Jan., 1893.) Male, aged [illegible] Kind of [illegible] band. The symptoms were those of acute [illegible] ment, laparotomy; the inflated bowel was [illegible] edges stitched to edges of wound. Result, death. Remarks: The diverticulum was attached to the mesentery, constricting bowel as a band. The bowel was gangrenous.

Case 23.—Morton: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Female, aged 9. Kind of crisis, obstruction by band. The symptoms were those of appendicitis and partial obstruction. Treatment, laparotomy; the diverticulum was excised. Result, recovery. Remarks: The diverticulum was adherent to the umbilicus; a loop of bowel was caught under the band thus formed.

Case 24.—Hall: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Male, aged 3. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, laparotomy; the [illegible] xcised. Result, recovery. Remarks: The [illegible] ched to mesentery; a loop of bowel was [illegible] d.

[illegible] Sellers: (Cited from Halstead, *Ann. of* [illegible] e and sex: 32, male. Character of symptoms, those of acute obstruction Kind of crisis, obstruction by band. Treatment, laparotomy. Result, death. Remarks: Diverticulum attached to umbilicus, loop of ileum caught under band thus formed.

Case 26.—Sellers: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Male, aged 32. Kind of cris[illegible] l. The symptoms were those of complete [illegible] laparotomy; the diverticulum was exci[illegible] marks: The diverticulum was attached to t[illegible] obstruction by kinking bowel by traction.

Case 27.—Fawcett: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Female, aged 11. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, laparotomy; the diverticulum was excised. Result, recovery. Remarks: The diverticulum was attached to "bowel" ring constriction.

Case 28.—Snow: (Cited from Halstead, *Ann. of Surg.*, vol. 35.) Male, aged 3. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, no operation. Result, death. Remarks: At autopsy, the diverticulum was found attached to mesentery acting thus as a constricting ring.

Case 29.—Mackay: (Cited from Halstead, *Ann of Surg.*, vol. xxxv.) Young female. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, laparotomy; the cord was divided. Result, recovery. Remarks: The diverticulum was attached to left to transverse colon, acting as band.

Case 30.—Hohlbeck: (cited from Halstead, Ann. of Surg., vol. xxxv.) Male, aged 4 years, 6 months. Kind of crisis, obstruction by band. The symptoms consisted of repeated attacks of pain and vomiting with a final attack of complete obstruction. Treatment, laparotomy; resection of portion of gut with diverticulum. Result, death. Remarks: The diverticulum was attached to omentum, thus producing obstruction by traction.

Case 31.—Hohlbeck: (Cited fro[illegible] vol. xxxv.) Female, aged 39. Kind of [illegible] The symptoms were those of comple[illegible] laparotomy; resection of portion of g[illegible] diverticulum; union with Murphy button. Result, recovery. Remarks: The diverticulum was free, knotted around intestine, thus causing stricture.

Case 32.—Symonds: (Cited fr[illegible] *Surg.*, vol. xxxv.) Female, aged 15. Kind of [illegible] band. The symptoms were those of comple[illegible] ment, laparotomy. Result, death. Remar[illegible] was adherent to gangrenous intestine, thus causing constriction.

Case 33.—Symonds: (Cited fro[illegible] vol. xxxv). Female, aged 26. Kind of [illegible] The symptoms were those of complete [illegible] laparotomy. Result, death. Remarks: "Gut folded around very wide diverticulum."

Case 34.—Schmidt: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Male, aged 15. Kind of crisis, obstruction by band. The symptoms were those of partial obstruction. Treatment, laparotomy. Result, death. Remarks: The diverticulum was attached to the umbilicus, thus producing obstruction by kinking bowel from traction.

Case 35.—Berard and Delore: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Male, aged 20. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, laparotomy; the diverticulum was excised. Result, recovery. Remarks: The diverticulum was attached to the umbilicus; there was obstruction of ileum and adhesion of loops.

Case 36.—Bell: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Female, aged 16. Kind of crisis, obstruction by band; symptoms were those of complete obstruction. Treatment, laparotomy. Result. Recovery. Remarks: The diverticulum was attached to the umbilicus, thus kinking the bowel from traction.

Case 37.—Nedivill: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Female, aged 16. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, laparotomy, "cord divided." Result, recovery. Remarks: The diverticulum was attached to the umbilicus, a loop of bowel was caught under band thus formed.

Case 38.—Carle and Chevet: (Cited from Halstead, *Ann. of Surg.*, vol xxxv.) Age and sex not stated. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, laparotomy; the diverticulum was excised. Result, recovery. Remarks: The diverticulum was attached to the mesorectum; a loop of bowel was caught under this band.

Case 39.—De Gueovain: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Male, aged 16. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, laparotomy; the diverticulum was excised. Result, recovery. Remarks: A pear-shaped diverticulum was attached to the mesentery, producing a twist in the small intestine at the point of origin of the diverticulum by traction.

Case 40.—Kammerer: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Male, aged 20. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, the diverticulum was removed with gangrenous bowel. Result, death. Remarks: The diverticulum was attached to a loop of bowel; another loop was caught under this band.

Case 41.—Kammerer: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Male, aged 44. Kind of crisis, obstruction by band. The symptoms consisted of obstruction with fecal fistula. Treatment, laparotomy; the diverticulum was excised. Result, recovery, with fecal fistula. Remarks: The diverticulum was attached to the umbilicus, thus producing obstruction from traction. At the first operation an artificial anus was established. The diverticulum was found at second operation.

Case 42.—Kammerer; (Cited from Halstead, *Am. of Surg.*, vol. xxxv.) Female, aged 18. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, laparotomy; the cord was divided. Result, recovery. Remarks: The diverticulum was attached to the mesentery, acting as a band under which a loop of bowel became strangulated.

Case 43.—Thompson: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Male, aged 29. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, laparotomy; the diverticulum was excised. Lembert sutures were used. Result, death. Remarks: The diverticulum was attached to mesentery, acting as band.

Case 44.—Erdmann: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Male, aged 20. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction complicated with appendicitis. Treatment, laparotomy; the diverticulum was excised. Result, recovery. Remarks: The diverticulum was attached to the umbilicus; a loop of bowel was caught under the band thus formed.

Case 45.—Halstead: (*Ann. of Surg.*, vol. xxxv.) Male, aged 24. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. The history showed several previous attacks of pain. Treatment, laparotomy; the diverticulum was excised. Result, recovery. Remarks: The diverticulum was attached to root of mesentery, thus acting as a band.

Case 46.—Taylor: Trans. Phila. Academy of Surg., *Ann. of* Surg., vol. xxxvii.) Female, aged 20. Kind of crisis, obstruction by band. The history showed previous attacks of pain about one year previous to operation; the later symptoms were those of complete obstruction. Treatment, laparotomy; the diverticulum was excised. Result, recovery. Remarks: The diverticulum wound around the gut through a hole in the mesentery, thus acting as constricting band.

Case 47.—Gildersleeve: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Male, aged 29. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, patient was not operated on. Result, death. Remarks: The diverticulum was attached to mesentery; the gut was caught under this band.

Case 48.—Fox: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Male, aged 5. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, patient was not operated on. Result, death. Remarks: The diverticulum was attached to the mesentery, acting as band; the diverticulum had ruptured at base.

Case 49.—Heresco: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Age and sex not stated. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, laparotomy, the cause of strangulation was not found. Result, death. Remarks: Autopsy revealed the diverticulum attached to the mesentery; a loop of bowel was caught under this band.

Case 50.—Jordan: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Male, aged 19. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, laparotomy; a portion of the gut was resected, lateral anastomosis. Result, death. Remarks: The diverticulum was attached to the umbilicus, causing obstruction by traction; the bowel was gangrenous.

Case 51.—Latz: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Male, aged 4. Kind of [illegible] d. The symptoms were those of complete [illegible] laparotomy. Result, death. Remarks: [illegible] attached to the mesentery; the bowel was caught under this band.

Case 52.—Latz: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Female, aged 12. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, laparotomy; the diverticulum was excised. Result, death. Remarks: The diverticulum was attached to the mesentery; the gut was caught under this ring.

Case 53.—Broca: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Male, aged 7 weeks. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, laparotomy; the gut was released. Result, death. Remarks: The diverticulum was attached to the mesentery; the gut was caught under band thus formed.

Case 54.—Elliot: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Male, aged 30. Kind of crisis, obstruction by band. Treatment, laparotomy; the diverticulum was excised. Result, death. Remarks: The diverticulum was attached to the umbilicus; the gut had kinked and twisted at point of origin of diverticulum.

Case 55.—Councilman: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Age and sex not stated. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, not mentioned. Result, death. Remarks: Autopsy revealed a diverticulum attached to the mesentery under which a loop of bowel became caught and gangrenous.

Case 56.—Boyle: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Age and sex not mentioned. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, laparotomy; "constriction removed." Result, death. Remarks: The diverticulum was attached to umbilicus, loop of bowel was caught under this tensely drawn band.

Case 57.—Ochsner: (Cited from Halstead, *Ann of Surg.*, vol. xxxv.) Male, aged 81. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, laparotomy, the loop was disengaged. Result, death. Remarks: The diverticulum was attached to the mesentery; a loop of bowel was caught under band thus formed.

Case 58.—Prince: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Female, aged 4. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, laparotomy; a portion of gut was resected, including diverticulum; union by Murphy button. Result, death. Remarks: The diverticulum was attached to the mesentery, a loop of bowel was caught under the band thus formed.

Case 59.—Oderfeld: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Age and sex not stated. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, laparotomy; the diverticulum was excised. Result, recovery. Remarks: The diverticulum was attached to the mesentery; a loop of gut was caught under this band. This case was diagnosticated as obstruction by Meckel's diverticulum before operation.

Case 60—Zurnrinkle: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Male, aged 19. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, laparotomy; the diverticulum was excised. Result, death. Remarks: The diverticulum was attached to the mesentery; a loop of bowel caught under this band thus formed.

Case 61.—Allen: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Male, aged 34. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, laparotomy; the diverticulum was excised. Result, not mentioned. Remarks: The diverticulum was attached to the umbilicus; the gut was twisted about this band.

Case 62.—Prendelsberge: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Male, aged 51. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, laparotomy. Result, death. Remarks: Cause of obstruction was not found at operation. Autopsy revealed a diverticulum attached to mesentery acting as a band in constricting the bowel.

Case 63.—Taylor: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Male, aged 22. Kind of crisis, obstruction by band. Treatment, laparotomy; "gut released." Result, death. Remarks: The diverticulum was attached to the gut for one and one-half feet above its origin; a loop of gut was caught under this band.

Case 64.—Campbell: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Male, aged 71. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, patient was not operated on. Result, death. Remarks: (Autopsy) the diverticulum was free, acting as a band.

Case 65.—Walsberge: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Male, aged 25. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, laparotomy; "gut released." Result, death. Remarks: The diverticulum was free—ends obliterated; there was obstruction by traction at point of origin of diverticulum; diverticulum formed a cyst; the intestine was necrotic.

Case 66—Mlutz: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Male, aged 24. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, no operation. Result, death. Remarks: (Autopsy) The diverticulum was attached to the mesentery; a loop of bowel was caught under this band.

Case 67.—Willams: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Male, aged 25. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, laparotomy. Result, death. Remarks: The diverticulum was attached to the mesentery; a loop of bowel was caught under this band.

Case 68.—Morgan: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Male, aged 38. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, laparotomy; the diverticulum was excised. Result, recovery. Remarks: The diverticulum was attached to the mesentery; a loop of bowel was caught under this band.

Case 69.—McArthur: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Male, aged 40. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, laparotomy; the appendix and diverticulum were excised. Result, death. Remarks: The diverticulum was attached to the mesentery and to the umbilicus; the appendix was caught under this tensely drawn band, becoming gangrenous. There was rupture of the appendix with peritonitis.

Case 70.—Henrotin: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Age and sex not stated. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, laparotomy; strangulation was released. Result, recovery. Remarks: The diverticulum was attached to stump of appendix by inflammatory adhesions; the intestine was twisted and obstructed.

Case 71.—Davison: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Male, aged 7. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, laparotomy: strangulation was released. Result, death. Remarks: The diverticulum was attached to another loop of intestine.

Case 72.—Bevan: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Female, aged 22. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, laparotomy; the diverticulum was excised. Result, recovery. Remarks: The diverticulum was attached to the umbilicus, thus acting as a band.

Case 73.—Bevan: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Male, aged 35. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, laparotomy; the diverticulum was excised. Result, recovery. Remarks The diverticulum with terminal ligament formed a ring.

Case 74.—Pieque: (*Munch. med. Wochft.*, May, 1898.) Age and sex not stated. Kind of crisis, obstruction by band. The symptoms were those of acute complete obstruction. Treatment, laparotomy; the diverticulum was cut between ligatures. Result, not stated. Remarks: The diverticulum encircled the intestine, crooking it.

Case 75.—Keefe: (*Boston Med. and Surg. Jour.*, Feb., 1905.) Male, aged 21. Kind of crisis, obstruction by band. The symptoms were those of acute complete obstruction. Treatment, laparotomy. the diverticulum was excised, stump inverted, and Lembert sutures used. Result, recovery. Remarks: The diverticulum was wound around the intestine.

Case 76.—Keefe: (*Boston Med. and Surg. Jour.*, Feb., 1905.) Male, age 17. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, laparotomy: the diverticulum was excised: Lembert sutures were used. Result, death. Remarks: The diverticulum was adherent to coils of intestine.

Case 77.—Karajan: (*Wiener klin. Wochft.*, 1901.) Male, aged 20. Kind of crisis, obstruction by band. When young, the patient had a fistula opening at the umbilicus, which would heal and break again. When taken to the hospital he had been suddenly taken with pain and vomiting. Treatment, laparotomy. The diverticulum was excised. Result, recovery. Remarks: The diverticulum was attached to the umbilicus, acting as band.

Case 78.—Karajan: (*Wiener klin. Wochen.*, 1901.) Male, aged 38. Kind of crisis, obstruction by band. The patient had had similar atta[illegible]sent one of acute obstruction. Treatment, [illegible] rticulum was excised. Result, death. Rem[illegible] was attached to posterior abdominal wall, acting as band.

Case 79.—Thienhaus: (*New York Med. Jour.*, February, 1902.) Male, aged 17. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction. Treatment, laparotomy. The diverticulum was excised. Czerny-Lembert sutures were used. Result, recovery. Remarks: The diverticulum was attached to the umbilicus: a loop of bowel was caught under band thus formed.

Case 80.—Roswell Park: (Personal communication.) Male, aged 40. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction. Treatment, laparotomy. Result, recovery. Remarks: The diverticulum was adherent, acting as a band.

Case 81.—W. J. Mayo: (Personal communication.) Male, aged 14. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction. There was a history of similar previous attacks. Treatment, laparotomy. Result, not mentioned. Remarks: The diverticulum was adherent, acting as a band.

Case 82.—W. J. Mayo: (Personal communication.) Male, aged 26. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction. There was a history of similar attacks previous to operation [illegible]. Result, not mentioned. Remarks: The [illegible] t, acting as a band.

Case 83.—Senn: [illegible] Age and sex not mentioned. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction. Treatment, laparotomy. The diverticulum was excised. Result, recovery. Remarks: The diverticulum was adherent, acting as a band.

Case 84.—Senn: (Personal communication.) Age and sex not mentioned. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction. Treatment, laparotomy. The diverticulum was excised. Result, recovery. Remarks: The diverticulum was adherent, acting as a band.

Case 85.—B. M. Ricketts: (Personal communication.) Male, aged 27. Kind of crisis, obstruction by band. The symptoms were those of partial obstruction. Treatment, laparotomy, resection of ileocecal portion of bowel and ileocolic anastomosis with sutures. Result, death. Remarks: Incision revealed tuberculous peritonitis. The ileocecal valve was the seat of a tuberculous neoplasm. The ileum was invaginated under a band extending from the ileum to the colon on the right side.

Case 86.—Ricketts: (Personal communication.) Male, aged 32. Kind of crisis, obstruction by band. The symptoms were those of partial obstruction. Treatment, laparotomy. The band was cut between ligatures. Result, death. Remarks: The diverticulum was adherent to the large bowel, acting as a band under which the gut became invaginated.

Case 87.—Ricketts: (Personal communication.) Female, aged 39. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction. Treatment, laparotomy. The diverticulum was cut between ligatures. Result, death. Remarks: The diverticulum was adherent, acting as a band.

Case 88.—Dunning: (Personal communication.) Young female. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction, coming on after pelvic trouble. Treatment, laparotomy. A portion of bowel with diverticulum was resected; union by Murphy button. Result, recovery. Remarks: The diverticulum was adherent, causing constriction and kinking of bowel at point of origin.

Case 89.—Rob Abbe: (Personal communication.) Age, 6; sex not stated. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction. Treatment, a portion of bowel with diverticulum was resected: end-to-end anastomosis. Result, recovery. Remarks: The diverticulum was adherent to the anterior abdominal wall; a loop of bowel was caught under this band.

Case 90.—M. D. Mann: (Personal [illegible] age, 35. Kind of crisis, obstruction by [illegible] were those of acute obstruction; there was [illegible] attacks of intestinal colic. Treatment, [illegible], the obstruction was released. Result, recovery. Remarks: The diverticulum was adherent to the small intestine, forming a band under which the gut became strangulated.

Case 91.—Purviance: (*Medical Summary*, April 1901.) Male, aged 9. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction. Treatment, laparotomy. Result, death. Remarks: The diverticulum was attached to the umbilicus, acting as a band under which the gut became strangulated.

Case 92.—Sexton: (*Indiana Med. Jour.*, December, 1902.) Male, aged 9. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction: there was a history of symptoms of partial obstruction. Treatment, laparotomy. Result, death. Remarks: The diverticulum was adherent to the intestine almost at point of origin, forming a ring under which the bowel was caught.

Case 93.—Cazin: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Male, aged 11. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction. Treatment, laparotomy; obstruction relieved. Result, death. Remarks: The diverticulum was unattached, "snared loop of intestines."

Case 94.—Gibbon: (*Med. News*, vol. lxxxii.) Female, aged 10. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction. Treatment, laparotomy; the diverticulum was excised. Result, recovery. Remarks: The diverticulum was adherent to the umbilicus, producing obstruction by kinking the bowel from traction.

Case 95.—Chassevant: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Age and sex not stated. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction. Treatment, patient was not operated on. Result, death. Remarks (autopsy): The diverticulum was attached to the umbilicus, thus kinking of the bowel by traction.

Case 96.—Guinard: Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Young, male. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction. Treatment, laparotomy. Result, recovery. Remarks: The diverticulum was attached to the mesentery, thus constricting the bowel.

Case 97.—Rixford: (Personal communication.) Aged 3. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction. Treatment, laparotomy: the diverticulum was excised. Result, recovery. Remarks: There was a diverticulum from the umbilicus to the intestine, with a band to the mesentery: the cecum and colon became strangulated under this band.

Case 98.—MacDonald: (Personal communication.) Age, 30, male. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction. Treatment, laparotomy. Result, death. Remarks: The diverticulum was adherent in pelvis; the gut caught under this band.

Case 99.—Willy Meyer: (Personal communication.) Male, aged 45. Kind of [illegible] and. The symptoms were those of acute [illegible] laparotomy: the diverticulum was excis[illegible] marks: The diverticulum from intestine [illegible] erent to mesentery, acting as a band.

Case 100.—Lilienthal: (Personal communication.) Female, aged 7. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction. Treatment, laparotomy, enteroenterostomy: the diverticulum was excised at tip. Result, death. Remarks: The diverticulum was the caliber of the small intestine with a terminal nipple-like projection, which was fished out from behind a fold of mesentery, which for some inexplicable reason seem to have constricted its base.

Case 101.—Tiffany: (Personal communication.) Male. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction. Treatment, laparotomy. Result, death. Remarks: The diverticulum was caught in loop of small intestine and had become gangrenous.

Case 102.—Moore: (The Journal A. M. A., Oct. 4, 1902.) Male, aged 4. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction. Treatment, laparotomy; the band was divided between ligatures. Result, recovery. Remarks: The sudden onset of symptoms gave rise to a diagnosis of obstruction by Meckel's diverticulum. The diverticulum was found attached to the mesentery and constricting the bowel.

Case 103.—Abbot: (Cited by Moore, The Journal A. M. A., Oct. 4, 1902.) Male, aged 19. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction. Treatment, laparotomy: the diverticulum was excised. Result, recovery. Remarks: The diverticulum was attached to the umbilicus; a loop of bowel was caught under the band thus formed.

Case 104.—Greig Smith: (*Abdominal Surg.*, vol. ii.) Age and sex not stated. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction. Treatment, laparotomy; the band was cut. Result, recovery.

Case 105.—Greig Smith: (*Abdominal Surg.*, vol. ii.) Age and sex not stated. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction. Treatment, laparotomy: the diverticulum was excised and the stump inverted; purse-string sutures were used. Result, not stated.

Case 106.—Maylard: ("Surgery of the Alimentary Canal," p. 462.) Male, aged 4. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction. Treatment, no operation. Result, death. Remarks: The diverticulum was attached to the mesentery; a loop of bowel was caught under this band.

Case 107.—Butcher: (Cited by Maylard, "Surgery of the Alimentary Canal," p. 462.) Age and sex not stated. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction. Treatment, laparotomy; the band was divided. Result not stated.

Case 108.—Fick: (Cited by Maylard, "Surgery of the Alimentary Canal," p. 462.) Age and sex not stated. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction. Treatment not stated. Result not stated.

Case 109.—Gillette: (Personal communication.) Male, aged 40. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction; there was a history of previous attacks of partial obstruction. Treatment, laparotomy: the diverticulum was excised. Result, recovery. Remarks: The diverticulum was attached to the mesentery; a loop of bowel was caught under this band.

Case 110.—Gillette: (Personal communication.) Male, aged 22. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction; there was a history of previous attacks of partial obstruction. Treatment, laparotomy; the diverti-

-culum was excised. Result, recovery. Remarks: The diverticulum was attached to the brim of the pelvis; a loop of bowel was caught under the band thus formed.

Case 111.—Bernays: (Personal communication.) Male, aged 7. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction. Treatment, laparotomy; the band was cut between ligatures. Result, recovery. Remarks: The diverticulum was attached to the umbilicus; a loop of bowel was caught under this band.

Case 112.—Wyman: (Personal communication.) Age and sex not stated. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction. Treatment, laparotomy; the obstruction was released. Result, recovery. Remarks: The diverticulum was wound about a coil of intestine.

Case 113.—Wyman: (Personal communication.) Age and sex not stated. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction. Treatment, laparotomy; the obstruction was released. Result, recovery. Remarks: The diverticulum was wound about a coil of intestine.

Case 114.—Wyman: (Pers [illegible] and sex not stated. Kind of crisis, [illegible] ymptoms were those of acute obstruct [illegible]; the diverticulum was excised. Re [illegible] *diverti*culum was wound about the [illegible]

Case 115.—Wyman: (Personal communication.) Age and sex not stated. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction. Treatment, laparotomy; the diverticulum was excised. Result, death. Remarks: The diverticulum was wound around the intestine.

Case 116.—C. C. Smith: (*Ann. of Surg.*, November, 1905.) Male, aged 19. Kind of crisis. obstruction by band. The symptoms were those of acute obstruction. Treatment, laparotomy; the band was cut between ligatures and the stump inverted; a purse-string suture was used. Result, recovery. Remarks: The diverticulum was adherent to left pelvic wall; a loop of bowel was caught under this band. The diverticulum also was twisted on itself.

Case 117.—Markoe: (Personal communication.) Male, aged 22. Kind of crisis, obstruction by ban [illegible] those of acute obstruction. Treatment, [illegible] culum was excised and stump inverte [illegible] marks: The diverticulum was adherent to the internal ring, acting as a band.

Case 118.—Markoe (Personal [illegible] ale, aged 19. Kind of c [illegible] were those of acute [illegible] diverticulum was excise [illegible] arks: The diverticulum was adherent to the mesentery, acting as a band.

Case 119.—Bowers: (Personal communication.) Female, aged 7. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction. Treatment. no operation. Result, death. Remarks (autopsy): The diverticulum was adherent to the mesentery, producing kinking of bowel by traction.

Case 120.—Beavers: (Personal communication.) Male, aged 21. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction; no operation. Result, death. Remarks: The diverticulum was adherent to the anterior abdominal wall, and had become gangrenous by stretching and twisting; a loop of bowel had become strangulated under this band.

Case 121.—Allan H. Williams: (Personal communication.) Male, aged 38. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction. Treatment, laparotomy; the diverticulum was excised. Result, recovery. Remarks: The diverticulum was adherent to the small gut; a loop of bowel was caught under this band. After operation, a fistula formed which healed spontaneously.

Case 122.—M. F. Porter: (Date of operation, Oct. 17, 1904.) Male, aged 19. Kind of crisis, obstruction by band with volvulus. The symptoms were those of acute complete obstruction. Treatment, laparotomy; the diverticulum was excised; a purse-string suture was used. Result, death. Remarks: The diverticulum was adherent to the left abdominal wall.

Case 123.—M. F. Porter: (Operation, Oct. 11, 1904.) Male, aged 8. Kind of crisis. obstruction by band. The symptoms were those of acute complete obstruction. Treatment, laparotomy; the diverticulum was excised: purse-string sutures were used. Result, recovery. Remarks: The diverticulum was found adherent to the upper and left part of anterior abdominal wall; under it a loop of bowel had become strangulated.

Case 124.—Arthur Barth: (*Ann. Surg.*, vol. viii.) Age and sex not given. Kind of crisis, prolapse of intestine. Symptoms not menti [illegible] rticulum was excised: Cze [illegible] marks: Patulous diverticul [illegible] of intestine.

Case 1[illegible] Child, aged 10 days. Ki [illegible] atment, artificial anus esta [illegible] excised at second oper [illegible] Bowel was prolapsed fr [illegible] as also protruding. An [illegible] of the contracted state of the lower bowel.

Case 126.—Beach: (*Ann. of Surg.*, vol. xxiv.) Female, aged 62. Kind of crisis, pelvic tumor, consisting of a diverticulum filled with hardened fecal material, connecting ileum and bladder. Treatment, laparotomy: the tumor was excised between ligatures. Result, recovery. Remarks: The best explanation of the cyst was that it was a Meckel's diverticulum; this was based on histologic [illegible]

Cas [illegible] nd Blanc: (Cited from Halstead, *Ann. of Su*[illegible] Kind of crisis, bowel obstruction. The symptoms were those of complete obstruction. Treatment laparotomy; the diverticulum was excised. Result, unknown. Remarks: *Obstruction was caused* by rupture of diverticulum and pressure of abscess on gut.

Case 128.—W. W. Cheyne: (*Ann of Surg.*, December, 1904.) Male, aged -9. Kind of crisis, intussusception. The symptoms were those of complete obstruction. *Treatment*, laparotomy; lateral anastomosis. Result, recovery. Remarks: The bowel was obstructed by intussusception above origin of diverticulum.

Case 129.—Studgaard: (Cited by Cheyne, *Ann. of Surg.*, December, 1904.) Male, aged 37. Kind of crisis, intussusception. The symptoms were those of complete obstruction. Treatment, laparotomy; resection of portion of bowel. Result, death. Remarks: The diverticulum was invaginated.

Case 130.—Brunner: (Cited by Cheyne, *Ann. of Surg.*, December, 1904.) Child, aged 4. Kind [illegible] The symptoms were those of complete [illegible] laparotomy; resection of portion of [illegible] Remarks: A firm tumor was expose [illegible] ng an accessory pancreas at apex imbedded in fat. The diverticulum was invaginated by the accessory pancreas, which in turn had caused intussusception of the bowel.

Case 131.—Heller: (Cited by Cheyne, *Ann. of Surg.*, December, 1901.) Age and sex not stated. Kind of crisis, intussusception of diverticulum. Symptoms not stated. Remarks (report from specimen): There was invagination of the diverticulum leading to intussusception of the ileum and colon.

Case 132.—Heller: (Cited by Cheyne, *Ann. of Surg.*, December, 1904.) Age 46. Kind of crisis, intussusception of diverticulum. Remarks (report of specimen): Patient died from the effects of perforating ulcer of stomach. Autopsy revealed an invaginated diverticulum.

Case 133.—Heller: (Cited by Cheyne, *Ann of Surg.*, December, 1904.) Age and sex not stated. Kind of crisis, invagination of diverticulum. Remarks: At autopsy of a patient who died of pyoneph [illegible] erticulum was found.

Case [illegible] Cheyne, *Ann. of Surg.*, December, 1904.) [illegible] crisis, intussusception of diverticulum. [illegible] those of complete obstruction. Treatme [illegible] death. Remarks: The diverticulum [illegible] bowel.

Case [illegible] y Halstead, Ann. of Surg., vol. xxxv.) Female, aged 42. Kind of crisis, intussusception of diverticulum. The symptoms were those of partial obstruction. Treatment, no operation. Result. death. Remarks (autopsy): There was inflammatory stenosis above the point of origin of the diverticulum; the diverticulum was inverted; there was perforation of the intestine.

Case 136.—Weil and Frankel: (Cited by Halstead, *Ann. of Surg.*, vol. xxxv.) Female, aged 4. Kind of crisis, intussusception of diverticulum and ileum. The symptoms were those of complete obstruction. *Treatment*, laparotomy; resection of portion of bowel. Result, death.

Case 137.—Adams: (Cited by Halstead, *Ann. of Surg.*, vol. xxxv.) Male, aged 42. Kind of [illegible] The symptoms were those of complete [illegible] no operation. Result, death. Remarks: [illegible] of the diverticulum, causing an ileocoli[illegible]

Case 138.—Adams: (Cited by Halstead, *Ann. of Surg.*, vol. xxxv.) Male. *Kind of crisis*, intussusception. *The symptoms* were those of complete obstruction. Treatment, no operation. Result, death. Remarks: The diverticulum was invaginated, causing ileocolic intussusception.

Case 139.—Hohlbeck: (Cited by Halstead, *Ann of Surg.*, vol. xxxv.) Age, 18. Kind of [illegible] symptoms were those of complete [illegible] arotomy; [illegible] excised. [illegible] *There was inversion of the mucous lin*[illegible] causing intussusception of bowel.

[illegible] (Cited by Halstead, *Ann. of Surg.*, vol. xxxv.) Male, aged 5. Kind of crisis, intussusception. The symptoms were those of complete obstruction. Treatment, laparotomy, resection of portion of bowel. Result, death. Remarks: There was inversion of diverticulum with invagination of the bowel above the diverticulum.

Case 141.—Wainwright: (*Ann. of Surg.*, vol. xxxv.) Male, aged 24. Kind of [illegible] mptoms were those of complete [illegible] omy: the intussusception was [illegible] xcised; Lembert sutures were u [illegible]: The diverticulum formed the a [illegible] diverticulum itself being inverte[illegible] the intussusception was reduced on pressure.

Case 142.—*MacDonald*: (Personal communication.) Male, aged 20. Kind of crisis, intussusception. The symptoms were those [illegible] Treatment, laparotomy: resection of [illegible] bowel: union by Murphy button. Re[illegible] There was intussusception of the di[illegible] um

[illegible] (*Phila. Med. Jour.*, May, 1901.) Male. [illegible] intussus[illegible] on. *Trea*[illegible] death. Remarks (autopsy): The [illegible] itself and partly invaginated into t[illegible]

Case 144.—M. F. Porter: (Operation, Oct. 2, 1904.) Male, aged 3. Kind of crisis, intussusception. The symptoms were those of complete obstruction. Treatment, laparotomy. Result, death. Remarks: The child was cold when carried to the table. The diverticulum was invaginated, causing intussusception of ileum.

Case 145.—Dobson: (*Lancet*, April 25, 1903.) Male aged 4½. [illegible] were those of [illegible] gut was re[illegible] Result, re[illegible] apex of in[illegible]

Case 146.—[illegible] Halstead, *Ann of Surg.*, vol. xxxv.) *Female, aged* 49. Kind of crisis, intussusception. The diverticulum formed the apex [illegible] vel.

Case 147.—Stubenrauch: [illegible] *nn. of Surg.*, vol. xxxv.) Female, aged 5[illegible] tussusception. The symptoms were those o [illegible] Treatment. laparotomy. Result, death. [illegible] ntussusception of the ileum starting at the p[illegible] erticulum.

Case 148.—Meyer and Lee: (*Amer. Jour. Med. Sciences*, March, 1905.) Age, 7 months. Kind of crisis, volvulus. The symptoms were those of acute obstruction. Treatment, laparotomy; the diverticulum was excised. Result, death. Remarks: The diverticulum formed a large cystic tumor which by traction produced twist in bowel.

Case 149.—Gally and Jeannel: (Cited by Halstead, *Ann. of Surg.*, vol. xxxv.) Male, aged 47. Kind of crisis, volvulus. The symptoms were those of acute obstruction. Treatment, laparotomy: *resection of gangrenous bowel*. Result, death. Remarks: The volvulus of the bowel was caused by traction at point of origin of diverticulum; the bowel was gangrenous.

Case 150.—Dugan: (*Pediatrics*, vol ii, p. 71.) Male, aged 11 months. Kind of crisis, volvulus. The symptoms were those of acute obstruction. Treatment, laparotomy; the diverticulum was excised. Result, recovery. Remarks: The gut was twisted at the point of origin of the diverticulum; the diverticulum was also twisted at its base.

Case 151.—Makins: (Cited by Halstead, *Ann of Surg.*, vol. xxxv.) Age and sex not stated. Kind of crisis, volvulus. The symptoms were those of acute obstruction. Treatment, laparotomy; the diverticulum was excised. Result, death. Remarks: The diverticulum was twisted, *gangrenous and perforated.*

Case 152.—Mackenzie: (Cited by Halstead, *Ann of Surg.*, vol. xxxv.) Male, aged 37. Kind of crisis, volvulus. The symptoms were those of acute obstruction. Treatment, no operation. Result, death. Remarks: The diverticulum was attached to the umbilicus; the small bowel was twisted for five feet above the point of origin of the diverticulum.

Case 153.—Waisberge: (*Cited by Halstead, Ann. of Surg.*, vol. xxxv.) Male, aged 14. Kind of crisis, volvulus. The symptoms were those of acute obstruction. Treatment, *laparotomy; an artificial anus was established*; the diverticulum was not excised. Result, death. Remarks (autopsy): The distended diverticulum was adherent to the umbilicus; torsion of diverticulum caused sharp twist at point of origin of diverticulum in gut; the intestine was *necrotic.*

Case 154.—Taylor: (Cited by Halstead, *Ann of Surg.*, vol. xxxv.) Female, aged 6. Kind *of crisis, volvulus.* The symptoms were those of acu[illegible] a history of several previous similar [illegible]rotomy; the diverticulum was excise[illegible]arks: The diverticulum was cystic a[illegible] base.

Case 155.—Kra[illegible] *Ann. of Surg.*, vol xxxv.) Male, age[illegible]ulus. The symptoms were those of acute *obstruction. Treatment, laparotomy*; the diverticulum was excised. Result, recovery. Remarks: A pear-shaped diverticulum was adherent to the *mesentery; the small* intestine was twisted at the point of attachment.

Case 156.—Broca: (Cited by Hubbard, *Ann of Surg.*, vol. xxxv.) *Male, aged 6 months.* Kind of crisis, patent at umbilicus. Treatment, laparotomy; resection of diverticulum. Result, recovery. Remarks: There was a *small red tumor a*[illegible] which a probe could be passed for some [illegible] membrane around the orifice was continuous

Case 157.—Broca: (Cited by Hubbard, *Ann. of Surg.*, vol. xxxv.) Male, aged 10 months. Kind of crisis, patent at umbilicus. Treatment, laparotomy. Resection of diverticulum. Result, recovery. Remarks: There was a small red tumor at the umbilicus [illegible] hole at summit of tumor.

Case [illegible] by Hubbard, *Ann. of Surg.*, vol. xxxv.) [illegible] crisis, *patent at umbilicus.* Treatment, *laparotomy*; resection of diverticulum. Result, recovery. Remarks: There was a red tumor at the umbilicus, with fecal discharge from a hole in summit.

[illegible] *n. of Surg.*, vol. xxxv.) Female, aged [illegible] patent at umbilicus. Treatment, lap[illegible] was excised; two rows of Lembert [illegible] *recovery. Remarks:* There was a [illegible] bilicus, with fecal discharge from a hole in the summit.

Case 160.—Bird: (*Ann. of Surg.*, vol. xxxviii.) Male, aged 1 month. Kind of crisis, patent at umbilicus. Treatment not stated. Result, *death.* Remarks: Tumor at umbilicus, with hole at summit and escape of fecal matter.

Case 161.—Darnall: (*N. Y. Med. Jour.*, Jan. 12, 1901.) Male, aged 22. Kind of crisis, diverticulitis. The symptoms simulated those of appendicitis. Treatment, *laparotomy. Result.* death. Remarks: The diverticulum was adherent to the umbilicus and [illegible]mal end and perforated.

[illegible] Cited from reprint of paper read before [illegible] 1899.) Male, aged 27. Kind of crisis, [illegible]s a *history* of several previous attacks [illegible] Treatment, laparotomy; resection of [illegible]nastomosis by *Murphy button.* Result, recovery. Remarks: The small intestine was thin at base of diverticulum; the muscular coat had given way. The *anastomosis* was made *of healthy tissue.*

Case 163.—Roth: (Cited by Halstead, *Medical Record*, 1902.) Age, 16 months. Kind *of crisis, diverticulitis.* The symptoms were those of general peritonitis. Treatment not stated. Result, death. Remarks: There was torsion of the *neck* of the diverticulum, resulting in gangrenous diverticulitis with general septic peritonitis.

Case 164.—Swkonski: (Cited by Halstead, *Med. Record*, 1902.) Age, 16 months. Kind of crisis, diverticulitis. The symptoms were those of general peritonitis. Treatment, not stated. Result, death. Remarks: The diverticulum was gangrenous, causing general septic peritonitis.

Case 165.—Squires: (The Journal American Medical Association, Oct. 4, 1902.) Male, aged 23. Kind of crisis, diverticulitis. The symptoms *simulated* appendicitis. Treatment, laparotomy; the diverticulum was excised. Result, recovery. Remarks: The diverticulum was inflamed, *causing* symptoms simulating appendicitis.

Case 166.—Fitch: (Cited by Halstead, *Med. Record*, 1902.) Age *and* sex not stated. Kind of crisis, tuberculous ulceration of the diverticulum. Treatment not stated. Result not stated. Remarks: The diverticulum presented on examination three ulcers.

Case 167.—Dixon: (Cited by Halstead, *Med. Record*, 1902.) Male. Kind of crisis, tuberculous ulceration of the diverticulum. Treatment not stated. Result, death. Remarks: The diverticulum presented on [illegible]tion.

Case 168.—Chauffard: [illegible] *cord*, 1902.) age, 9. Kind of *crisis.* [illegible] during typhoid. The symptoms were those of general peritonitis. Treatment not stated. Result, death. Remarks: The diverticulum presented on examination a tumefied Peyer's patch, but no ulceration or perforation

Case 169.—Halstead: (*Med. Record*, 1902.) Male, aged 26. Kind of cri[illegible]he symptoms were those of general [illegible]otomy: the diverticulum was excise[illegible] The diverticulum was perforated at tip.

Case 170.—Halstead: (*Med. Record*, 1902.) Male, aged 45. Kind of crisis, perforation in typhoid. The symptoms were those of peritonitis. Treatment, laparotomy; the diverticulum was excised. Result, death. Remarks: The diverticulum was adherent to the anterior abdominal wall and was perforated at the tip.

Case 171.—Galton: (Cited by Halstead, *Med. Record*, 1902.) Age, 12. Kind of crisis, perforation in typhoid. The symptoms *were those of peritonitis. Treatment* not stated. Result, death. Remarks: The diverticulum and ileum were perforated.

Case 172.—Boinet and Delanglade: (Cited by Halstead, *Med. Record*, 1902.) Female, aged 35. Kind of crisis, perforation in typhoi[illegible] those of peritonitis. Treatment, laparo[illegible]was excised. Result, death. Remarks[illegible]ound perforated at tip.

Case [illegible] Halstead, *Med. Record*, 1902.) Male, [illegible]verticulitis. The symptoms were those [illegible] *not stated. Result,* death. Remarks: A foreign body was found in the diverticulum as cause of the inflammation.

Case 174.—Demice: (Cited by Halstead, *Med. Record*, 1902.) Age and sex not stated. Kind of crisis, diverticulitis. The symptoms were those of peritonitis. Treatment not stated. Result, death. Remarks: A foreign body was found in the diverticulum *as cause of inflammatory* process.

Case 175.—Best: (Cited by Halstead, *Med Record*, 1902.) Age and sex not stated. Kind of crisis, diverticulitis. The symptoms were those of peritonitis. Treatment not stated. Result, death. Remarks: The diverticulum was filled with cherry stones and perforated.

Case 176.—Houston: (Cited by Halstead, *Med. Record*, 1902.) Age and sex not stated. Kind of cri[illegible]atient had recurring attacks simulating [illegible] not stated. Result, *death.* Remarks. [illegible] filled with fecal concretion.

Case 177.—Galeazzi: (Cited by Halstead, *Med. Record*, 1902.) Age and sex not stated. Kind of crisis, diverticulitis. The symptoms were those of peritonitis. Treatment not stated. Result, death. *Remarks:* The diverticulum was filled with fecal concretion.

Case 178.—Escher: (Cited by Halstead, *Med. Record*, 1902.) Age and sex not stated. Kind of crisis, diverticulitis. The symptoms were those of *peritonitis.* Treatment not stated. Result, death. Remarks: Round worms were found as cause of diverticulitis.

Case 179.—Blanc: (Cited by Halstead, *Med. Record*, 1902.) Age and sex not stated. Kind of crisis, diverticulitis. The symptoms were those of peritonitis. Treatment not stated. Result, death. Remarks: A fish bone was cause of the diverticulitis.

Case 180.—W. Kramer: (The Journal of the American Medical Association. 1898.) Age and sex not stated. Kind of crisis, diverticulitis. The symptoms were those of peritonitis. Treatment, *laparotomy*; resection of diverticulum between ligatures. Result, not stated. Remarks: A fruit seed was cause of the *diverticulitis*; diverticulum was perforated.

Case 181.—Cramer: (Cited by Halstead, *Med. Record*, 1902.) Age and sex *not stated.* Kind of crisis, diverticulitis. The symptoms were those of peritonitis. Treatment not stated. Result not stated. Remarks: *The diverticulum* was ruptured as result of kick by horse, causing suppurative peritonitis.

Case 182.—C. C. Smith: (*Ann. of Surg.*, November, 1905.) Age, 10. Kind of crisis, diverticulitis. The symptoms simulated appendicitis. Treatment, laparotomy; the diverticulum was *excised* between ligatures. Result, recovery. Remarks: The diverticulum was inflamed and adherent to the omentum.

Case 183.—*Nicolson: (Cited* by Smith, *Ann.* of *Surg.*, November, 1905.) Age and sex not stated. Kind *of* crisis, diverticulum gangrenous with adhesions *causing obstruction.* Treatment, laparotomy. Result, death. Remarks: The diverticulum was gangrenous and adherent to umbilicus, acting *as band*, causing obstruction.

Case 184.—Bernays: (Personal communication.) Age and sex *not stated.* Kind of crisis, diverticulitis. The symptoms were those simulating appendicitis. Treatment, laparotomy; the diverticulum was *excised.* Result, recovery. Remarks: The diverticulum was inflamed *and* gangrenous.

DISCUSSION.

Dr. R. Winslow, Baltimore, mentioned two cases. In one he encountered a Meckel's diverticulum in a gangrenous hernia, which resulted fatally. The other patient, a woman, was recently taken to him with a lump in her right side. It was somewhat movable, and operation was performed under the impression that it was probably an appendicitis. Dr. Winslow found a pus tube with a large ovary, chronic appendicitis and Meckel's diverticulum, all surrounded by omentum. He removed the diverticulum and the appendix and the patient recovered.

Dr. W. Jepson, Sioux City, Iowa, said that it is certainly somewhat remarkable that there exists such a paucity of reported cases wherein this remnant of embryologic life has led to morbid processes demanding operative interference; especially is this so when it is considered that postmortem findings reveal the fact that from one to two of every hundred individuals are possessed of a Meckel's diverticulum. He is of the belief that serious intra-abdominal disturbances occasioned by this structure are observed by surgeons more frequently than is borne out by reported cases. Three cases coming to operation have been observed by him. One was the case of a child 16 months old, suffering from intussusception. When the bowel was exposed it was found that a Meckel's diverticulum was primarily intussuscepted, and this in turn caused an intussusception of the ileum. The intussusceptions of the ileum and of Meckel's diverticulum were readily reduced. Owing to the child's grave condition, Dr. Jepson did not feel warranted in removing the diverticulum as he otherwise would have done. No difficulty has been experienced by the child since that time, now nearly three years ago. The second case occurred in a man 37 years of age who possessed a diverticulum which was dilated, being about the size of an orange. It contained fourteen concretions, each being about the size of a hickory nut, besides a great number of other food products, such as grape seeds, etc. The contents of the diverticulum produced such traction on the bowel that it led to an angulation with consequent intestinal obstruction, which in turn disturbed the circulation of the diverticulum so that it became gangrenous. The third case observed was one in which the diverticulum became strangulated in the sac of a right inguinal hernia.

Dr. Miles Porter stated that Dr. Cheyne says that in cases of intussusception of Meckel's diverticulum the mucous membrane alone is turned in, but in the three cases which he has examined it included all the coats.

EXSTROPHY OF THE BLADDER SUCCESSFULLY TREATED BY PETER'S METHOD.*

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SAN FRANCISCO.

I am submitting the report of a single case, because it illustrates well an exceedingly easy method of meeting difficult conditions and controlling them almost entirely, so far as theoretical considerations go, and quite entirely so far as this particular case is concerned.

It is hardly necessary to repeat that the ordinary plastic operations which contemplated the creation of a bladder, in cases of exstrophy of that organ, did not include the creation of a sphincter vesicæ; and yet a bladder with no sphincter is really no bladder, but is only a wider part of the urinary tract. After the most brilliant success in an operation of this type the patient has to wear a urinal, his real bladder, hanging down by his leg.

The utilization of the colon or rectum as a receptacle for the urine, an artificial reversion to the avian type, was resorted to, in order to make the sphincter ani do the work of the absent sphincter vesicæ. The genuine brilliancy of the idea, which may be credited to John Simon[1] in 1805 could not at the time of its inception be rewarded by a practical result, for the sepsis that naturally followed any such operation at that period killed the patient. The same sepsis has stood steadily in the way of the method during all the intervening years and probably will always stand there, but in some details it has been circumvented, more especially the septic peritonitis, by the simple plan of avoiding the peritoneum, while the septic nephritis, unless statistics wholly mislead, has been so long postponed as to give rise to the hope that it may never occur.

The operation accomplishing this, described by the originator, George A. Peters,[1] of Toronto, avoids opening the peritoneum by confining the work to the space in the abdomen and pelvis, below the vesicorectal limits of the peritoneum, in both males and females, and so narrows the possibility of septic danger to that inherent in all operation work and avoidable in almost all, and that, too, due to the ascending infection of the ureters and kidneys.

The operation dissects out the ureters individually, keeping a small circular patch of bladder wall around the vesical orifice of each. The rest of the bladder wall is ablated. Each ureter, with its button of bladder wall, is then drawn through a small slit in the rectal wall of its own side and left hanging from 1 cm. to 1.5 cm. into the rectal lumen.

This very general statement covers the fundamental idea of the operation, for the peritoneum has not been opened; but there are certain details of technic which seem debatable and I have sufficient assurance to wish to discuss them in the light of my one case.

The idea on which the operation of Maydl was based, namely, that there was a sphincteric action in the muscular layer of the bladder wall around the openings of the ureters, and that this required the conservation not only of this muscular fiber which surrounded each ureteral orifice, but also of those that surrounded both of them together, has to be abandoned; and with it may be given over the necessity for transplanting the whole of the trigone of the bladder into the colon or rectum, and making it practically a part of their wall. It is only necessary, therefore, to conserve such part of the bladder wall as surrounds each ureteral opening individually, and even this not with the idea that it contributes a sphincteric control of the opening, but merely with the idea that the wound of the mucous membrane is made at a reasonable distance from the mouth of the ureter and that the ureteral mucosa itself is left absolutely intact.

In the earlier operations which Peters himself did, he passed into each ureter a small catheter and fastened it there. Its presence in the ureter served as a guide which prevented the wounding of the ureter during the operation and afterward served as a means to conduct the urine out of the rectum during the first thirty-six to forty-eight hours following the operation. In one of Peters' patients an ascending infection occurred and the patient died, and Peters thought that the infection possibly was due to the fact that he had left the catheter in the ureter after the transplantation of the ureter into the rectum. This made me desire to avoid the use of the catheter at all, and as I began my operation I attempted to dissect out the ureter without the assistance of the catheter as a guide. I did this quite as much because of the infected state of the exposed vesical mucosa and the fear that in passing a catheter into the ureter I should carry up with it a certain amount of the infection. I found, however, that the dissection in the abnormal anatomic relations of the parts in these exstrophied cases was difficult, and I fortunately put into each ureter a small ureteral catheter to act as a guide, for had I not done so I should quite certainly have cut off the right ureter from ignorance of its anatomic location. In this one case of mine I found that the ureters approached the bladder from either side of the abdomen and passed transversely from the periphery of the exstrophied bladder toward their openings.

I believe that it will be wise for anyone who is undertaking this particular operation to put into each ureter before he dissects it out, a ureteral catheter. After the dissection has been completed, the catheter should be removed. It is no longer of service.

I departed from the Peters technic in that I did not retain the catheter in the ureter after the latter had been transplanted into the bladder. Instead of that I let the ureter begin to discharge urine into the rectum from the first and merely saw that its exit was arranged for by a tube in the anus. In the operation, as Peters has described it, dilatation of the sphincter ani was practiced so as to permit free exit for the urine. Of course, stretching the sphincter is a simple and common matter, and very rarely results in paralysis. It is quite possible, however, for a man to stretch the sphincter of a child more than he thinks he is doing, and as the end for which the stretching is done can be equally well attained by fastening a little rubber tube in the anus, it seems wise to me not to stretch this sphincter; and the plan has worked well, at least in this one case of mine. I can not well conceive how a man could be more mortified than to find, after he had made a successful transplantation of the ureters into the rectum, that he had no sphincter ani, and that all that he had accomplished by his operation had been to change the point of incontinence from the hypogastrium to the anal region.

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* Read in the Section on Surgery and Anatomy of the American Medical Association, at the Fifty-sixth Annual Session, July, 1905.

[1] Peters, Brit. Med. Jour. 22, June 1901.

In the operations which Peters has described, he packed the opening in the hypogastrium and let it gradually cicatrize. There seems to me to be a fairly good reason for this, for if there is any leakage from the rectum by the side of the ureter through the little opening which is made for the introduction of the ureter, the packing would act as a drain to the surface and so prevent a local and possibly general infection. Peters has not closed the openings in the rectal wall in any way. In my one operation I put in a single catgut stitch which brought the opening down to a size just sufficient to contain a ureter, and in the stitch I caught up a little of the periureteral areolar tissue which had been kept with the ureter to carry its blood vessels. This precluded the probability of any leakage from the rectum, and I should think it would be quite possible in some of these cases immediately to suture the recti together and so close, at once, the abdominal wall. In my own case I could not do this, for the child was very feeble and was already on the verge of shock when I had completed the transplantation, so that I followed Peters' plan and merely packed the abdominal wound. Later, after the general condition of the child had improved, it was a simple matter to go back and make a firm suture of this abdominal wound, it having in the meantime practically filled up with granulation tissue and nearly cicatrized over. In doing this I was surprised to find how easy it was, in this particular case, to draw the recti together, even though there was no os pubis on either side and no symphysis.

In the ablation of the vesical mucosa I was particularly careful to leave untouched the prostatic urethra which lay as an open saucer-shaped space in its usual location, and in it could be plainly seen the openings of the seminal ducts. From it extended, as a gutter, the open urethra. At a secondary operation I closed in the urethra from the meatus to the prostatic portion by the Duplay method, but I failed at first, to get union over the prostatic sinus. This has been accomplished, however, at later operations. This child, therefore, has a genital canal, normal up to his prostatic urethra, and from that point on to the meatus completed by an artificial closure of the urethra which should, in time, give him the opportunity of doing his duty toward the propagation of the species.

Reverting to the history of the convalescence of this child, it is only necessary to say that from the beginning his rectum acted perfectly well as a bladder, and would retain his urine from one to two hours. Later the period was increased to three or four hours, being only a little longer in the daytime than in the night. An examination of the urine which was voided, usually independently of any feces, though sometimes there were small fecal flecks in it, showed it to be acid, to have a cloud of albumin, and to have no sugar, but there were present triple phosphates, amorphous urates and bacteria. During the period of the child's residence in the hospital, he was given small doses of hexamethylenamin with the idea of preventing an ascending infection. Whether or not this was of use I can not say, but no ascending infection occurred up to the time of his leaving the hospital, and reports from his home state that he is in excellent health. At the time the child left the hospital, he was different from the ordinary child only in having a scar in the middle line of the lower part of his abdomen, representing a place which had formerly been occupied by the bladder. His penis was somewhat short, and a scar ran along its dorsum where satisfactory union of the integument had not occurred. His urethra extended from its proper opening on the tip of the glans backward to the prostatic portion. To urinate he had to sit down as if he was going to have a stool, and his urine came from his rectum. A finger in the rectum could feel, on either side, just above the internal sphincter, the little projections of the ureters which, each with its button of vesical mucosa, hung close to the rectal wall. It may not be an impossibility for him to go through life without any but the most intimate of friends knowing his differences from them.

Peters has reported four cases in the literature, and in March, 1905, he wrote me that he had operated in his fifth case. Katz of Braila, Roumania, reported, in 1903, nine operations transplanting the ureters individually into the rectum, and these include Peters' four cases. Of the other five operations, only one, that of Pye Smith, was by Peters' technic. The other operators, Pozzo, Capello and Colzi (two cases) transplanted the two ureters apparently by one opening on the anterior wall of the rectum; and each patient had a urinary fistula. Of these nine patients, only two have died of ascending infection: Peters' patient and Colzi's first patient, the former on the fourth day and the latter after seven months. Peters' fifth case case and my one bring the total up to eleven cases.

Peters' first operation was done in 1901, and the patient has now lived four years with his rectum doing duty as his bladder. It is not false reasoning, I maintain, to argue that as this boy has gone four years he may go eight years, and if he goes eight he may go sixteen; many a justifiable surgical procedure has a less secure foundation. The operative technic is simple and easily performed, and the operation should not prove a difficult task in the hands of anyone who has ordinary surgical ability. The condition for which it is proposed is one in the extreme, and I can not but think that a great deal has been given to us in this method. The Maydl operation had a mortality of about 33 per cent., the deaths being due to chloroform, hemorrhage, hydronephrosis, peritonitis and pyelitis. This particular operation has not been done often enough to warrant the calculation of percentages, but I do not see why the operation itself should entail any mortality, except, perhaps, in very weak and puny children. Septic peritonitis, which can not help being a fatal factor in the Maydl operation, whether the transplantation of the trigone be made into the rectum or into the colon, is here eliminated entirely. The only unavoidable danger is in the ascending infection, and there seems good reason to believe that this may be indefinitely postponed.

DISCUSSION.

Dr. E. A. Wells, Hartford, Conn., stated that he assisted Dr. Hartley[1] of New York in two operations similar to those of Dr. Sherman. The first patient was not operated on for exstrophy, but for chronic tuberculous cystitis; however, the principles of the operation are the same. Both patients were 18; one a girl, the other a boy. I say a boy, because his general non-development gave him that appearance. Dr. Hartley dissected out the trigone of the bladder in these cases, and freely opening the peritoneal cavity, inserted this into the sigmoid flexure of the great intestine. The abdominal wound was closed immediately. Both these patients did well. At last reports both could hold their urine a normal length of time and could void it at will and separately from the feces. The girl is married and has had a child. The boy has had several previous operations for his exstrophy, epispadias, etc., to no avail. Dr. Hartley did not use a ureteral catheter. If this is used, one should be very careful to avoid unnecessary traumatism about the ureteral orifice, as on the integrity of this bit of tissue depends in large measure the success of the operation. It is undoubtedly better to do the operation as Dr. Sherman suggests, namely, without opening the peritoneal cavity.

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[1] Med. News, Aug. 29, 1903.

Dr. L. L. McArthur, Chicago, said that some experiments have been made by Dr. Peterson of Ann Arbor and Dr. Martin of Chicago, with a method of implanting the ureter into the rectal wall so as to militate against the backward regurgitation. They have been able to accomplish this by making an oblique implantation of the ureter into the rectum projecting a portion well into the lumen of the rectum, as done by Dr. Sherman, but in addition burying the portion outside of the rectum by infolding the rectal wall around the urethral wall for an inch. By these means they claim that as fecal masses pass they tend to milk, rather than to overcrowd infection into the ureter, thus materially lessening the danger of an ascending pyelitis. They seem to have added something to the technic.

Dr. H. M. Sherman said that he thinks the operation referred to by Dr. Wells was the regular Maydl operation, and he does not think Dr. Hartley varied its technic. Dr. Dudley Tait of San Francisco and Dr. Sherman spent every Sunday morning for many Sundays trying to do the Maydl operation on dogs. They killed many dogs doing it, and every one died of peritonitis. This is the experience of everyone who has tried to transplant both ureters in dogs, and this difficulty impressed itself on them. The dog's bladder is entirely intraperitoneal, and it is impossible to open it without opening the peritoneum. Peter's operation consists in dissecting out each ureter individually with a button of vesical mucosa, and passing dressing forceps into the rectum and then through its wall with which to grasp the button of vesical mucosa. The transplantation of the ureters into the rectum is thus exceedingly simple and easy, and takes only a few minutes. It is all an extraperitoneal manipulation. The obliquity of the puncture in the rectal wall can not make much difference, for even if it was made oblique it would probably soon become direct. No account is taken of the fact that the feces pass over the opening of the ureter, as they seem to have done no harm. Ascending infection has not occurred in any patient except the one in whom Peters kept the catheter too long in the ureter. One point is important: one must avoid wounding the vesicle or ureteral mucosa. The difficult matter in Dr. Sherman's case was closing the urethra. It is a mistake to approach this operation with the expectation of finding this plastic work on the epispadias easy because of the fact that no urinary function is going on in the urethra. Compared with this the trasplantation of the ureter into the rectum is very simple.

DRUGS AND THE DIAZO REACTION.*

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ELKINS, W. VA.

It is not my purpose to enter here into a discussion of the extent of the value of the diazo reaction in clinical work. I take it for granted that physicians are all making use of the test for this reaction, and that like myself they have found it of much help, particularly in the diagnosis of typhoid fever.

During the past year, a statement from an Italian source appeared in the medical press of this country to the effect that certain drugs when ingested will cause the urine to react positively to the usual diazo test. An editorial in a leading medical journal seemed to take this statement for granted. This has induced me to institute some observations on this subject in the wards of the Davis Memorial Hospital, the details and results of which I herewith submit.

Observation 1.—A man aged 40, recovering from a compound fracture of the femur. All functions were normal; urine normal. To simulate the dietetic conditions of typhoid fever, he was placed, during the period of observation, on an exclusive milk diet preceded by an effective dose of castor oil. Three grains of thymol were administered every three hours for forty-eight hours, and the urine tested for the diazo reaction at the middle and at the end of this period. Result negative.

Observation 2.—A man, aged 19, recovering from a fracture of both femurs. General diet. All functions normal; urine normal. Five grains of salol were administered every four hours for a week and the urine was tested for the diazo reaction every twenty-four hours. Result negative.

Observation 3.—Patient of the last observation. All functions were normal; urine normal. After the salol was stopped, he was placed on guaiacol carbonate gr. 3 every three hours for forty-eight hours. Urine was tested for the diazo reaction at the end and at the middle of that period. Result negative.

Observation 4.—A woman, aged 39, recovering from an oöphorectomy. There was some intestinal fermentation, otherwise normal; urine normal. General diet. She was given 5 grains of sodium sulphocarbolate every three hours for three weeks. Urine was tested repeatedly for diazo reaction during that period. Result negative.

Observation 5.—A man, aged 55, recovering from a simple fracture of the femur. All functions were normal; urine normal. Exclusive milk diet. Five grains of salol were given every four hours for 48 hours. Urine was tested for the diazo reaction at the end and at the middle of that period. Result negative. The dose was then increased to 7 grains and continued for another 48 hours. At the end of this period the urine showed the characteristic dark color. Diazo reaction was absent.

Observation 6.—A woman, aged 39, recovering from an operation for hemorrhoids. All functions were normal; urine normal. Exclusive milk diet. Five grains of salol at intervals for forty-eight hours and the same drug in doses of 7 grains for 48 hours longer. Urine was tested for the diazo reaction at intervals of twenty-four hours. Result negative.

Observation 7.—A man, aged 35, recovering from a contusion of the thighs. All functions were normal; urine normal. General diet. Three grains of thymol were given every three hours for seventy-two hours. Urine was tested at the end of each twenty-four hours. Result negative.

It would seem, therefore, that while the observations are not large in number, as far as they go they most emphatically disprove the assertion that salol, thymol, sodium, sodium sulphocarbolate and guaiacol carbonate have the power of producing the diazo reaction in the urine of persons taking these drugs.

While working on this subject it occurred to me that it might prove of interest to the general practitioner to learn whether this reaction, when present in the urine, would continue to be present after the urine stood for some time with or without the addition of preservatives, as it so often happens that a physician is unable to test it for some time after it is voided. The following observations were made:

Observation 1.—Sixty c.c. of typhoid urine with a marked diazo reaction was allowed to stand in an open conical glass for 48 hours in a temperature of about 70 degrees F. Marked decomposition was present at the end of that time. After filtrating the urine the diazo reaction was found present and as intensely marked as when it was fresh.

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* Read before the West Virginia State Medical Association, 1905, at Wheeling, W. Va.

Observation 2.—To 60 c.c. of the same urine 2 c.c. of chloroform was added and allowed to stand for one week. The reaction was found unimpaired at the end of that period.

THE FAT OF TOP MILKS.

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AND
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The use of top milks in infant feeding is rapidly increasing, and we have thought it advisable to examine the typical milks of the Philadelphia milk market for their percentages of fat, particularly the milk sold with a certificate of quality issued under the authorization of the Philadelphia Pediatric Society.

The certified milks of Philadelphia are, Dr. J. P. Crozer Griffith informs us, four in number, as follows: The Willow Brook Farm, the Haddon Farm, the Wawa Dairy, and the Bryn Clovis Farm. Since this information was received, we have learned that the sale of certified milk by the Bryn Clovis Farm has been discontinued.

We have examined, also, the Walker-Gordon guaranteed milk, in one pint and one quart bottles, and the milk regularly sold by four representative milk dealers of this city.

The certified milks, we are told, are from milkings made about 4 p. m., bottled on the farm, and delivered to the consumer the following morning. They are then about 16 hours old. The regular milks we examined were sent in bulk to the city, and bottled on the evening before delivery, and were about 16 hours old when examined.

Of the three certified milks of Philadelphia, two are sold only in one-pint bottles, and the third is sold in both one-pint and one-quart bottles. This fact is important, because the formulas for milk modifications with top milks are all based on the use of top milks taken from one-quart bottles, and not from one-pint bottles; and our experiments show radical differences in the fat percentages of top milks as taken from each. The sizes of the bottles were:

	Height. Inches.	Outside diameter at base. Inches.	Inside diameter of neck. Inches.
Pints (certified)	8⅛	2½	1¼
Pints (certified)	8⅛	2½	1¼
Pints (certified)	8	2¾	1½
Pints (guaranteed)	7	2⅞	1⅜
Quarts (certified)	9¼	3¾	1⅜
Quarts (guaranteed)	8¾	3¾	1⅜
Quarts (regular)	8⅛	3¾	1¼
Quarts (regular)	9	3¾	1½
Quarts (regular)	9¾	3¾	1¼
Quarts (regular)	8¾	3½	1⅝

The differences in sizes will be noted. While small, in some instances, the size and shape of containers exert an important influence in creaming, or the production of the top milks, more so than the difference would apparently indicate. The height of the layer of cream was from 2½ to 4 inches. As a rule, the less high the creamy layer the denser and richer in fat.

While the amount of cream is governed by the amount of fat in the milk, the shape and size of the container and the length of time the milk has stood are factors of equal or greater importance.

Creaming, that is gravity-creaming, is the separation or raising of the fat globules to the surface of milk. It is mechanical in action. The more narrow and cylindrical the container the readier the creaming and the more dense the upper layer; the broader the container the less ready the creaming and the less dense the upper layer. This is shown by the differences in the creams obtained from an open pan and from a tall cylindrical bottle.

The fat globules are suspended in the milk. It is generally believed that each globule is surrounded by a thin nitrogenous membrane, protoplasmic in origin, which becomes ruptured on churning. This theory is by no means universally held to-day. Babcock and many others believe that milk is simply a natural emulsion.

The length of time a milk has stood before the top layers are removed is a most important factor. We found that a one-half ounce of top milk, 16 hours old, assayed 17.6 per cent. fat, and 24 hours later another half-ounce of top milk from the same bottle assayed 26.4 per cent. (It should have assayed much less, as the richer layer had previously been removed). Similarly, a one-ounce sample was increased from 15.2 per cent. to 16.5 per cent, another one-half ounce sample from 19.8 per cent. to 32.4 per cent., and another one-ounce sample from 18.4 per cent. to 26.4 per cent.

Upper.	Pints.				Quarts.						Averages.		
	Certified.			Guaranteed.	Certified.	Guaranteed.	Regular.						
	1	2	3	4	5								
½ oz.............	27.60*	27.60*	23.00	17.60†	24.20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1 oz.............	23.20	22.00	21.20	15.20	22.00	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2 oz.............	22.40	20.40	19.80	15.50	22.10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4 oz.............	15.20	11.20	16.20	12.00	20.10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
6 oz.............	11.12	8.80	11.50	8.40	17.80	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
8 oz.............	8.86	7.20	8.20	6.10	14.90	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
12 oz.............	5.60	5.20	6.40	4.30	10.30	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
16 oz.............	....	3.80	4.80	3.95	....	....	....	....	....	....	....	....	....
	4.78	4.10	4.80	3.95	8.10	6.30	6.80	6.10	6.20	8.40	4.40	7.00	9.40
32 oz.............	....	....	....	....	4.60	3.50	3.75	3.70	4.20	5.35	....	....	....
	....	....	....	....	4.60	3.60	4.40	3.75	5.20	5.40	....	....	....

* The high percentages in these cases are probably due to the cylindrical shape of the bottle and the small inside diameter of the neck.

† The low percentage in this case is undoubtedly due to the shape of the bottle and probably also to the shorter time of creaming.

In our determinations of fat, the Leffmann and Beam method,[1] devised in 1889, was used. This method gives rapid and exceedingly accurate results.

In the table given, references are made to the standards of Winters,[2] on which many of the formulas in general use are based.

Examination of these results reveals a number of interesting facts. The percentage of fat in whole milk varies greatly. Leach[3] reports such variations to be 180 per cent.

1. The richer the upper layers of top milks in fat the poorer the lower layers.

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[1] Leffmann and Beam's "Food Analysis," 1905, p. 203.

[2] "Feeding in Early Infancy; Home Modification of Milk," by Joseph E. Winters, M.D., Professor of Diseases of Children, Cornell University Medical College, Medical Record, March 7, 1903, p. 366.

[3] Food Analysis, 1904, p. 91.

2. The differences in the fat percentages of top milks in pint bottles and quart bottles are marked, especially in the lower layers. The variations in extreme limits from the minimum to the maximum were from 60 to 170 per cent. The maximum variation of the whole milks examined was nearly 50 per cent.

3. The quart bottles of the Philadelphia milks follow the Winters' standards for the upper one-half ounce, one ounce, two ounce and four ounce very closely. Above that the differences are wide.

4. The pint bottles of certified milks follow Winters' standards nearly for the upper one ounce and two ounce, but differ radically in all the rest. *The one-pint bottles of milk should never be used instead of one-quart bottles for obtaining top milks for infant feeding, as the differences in fat percentage are too great.*

In the Winters formulas for the modification of milk for infants of less than 1 month of age, one-half ounce of top milk from each of two quart bottles of milk is used in 11.5 ounces of food, and the fat percentages run about from 1.75 to 2.5 of fat, instead of 2 per cent. (Winters standard); where the upper half-ounce from each of three one-quart bottles is used in 14 ounces of food, the fat percentages are from 2 per cent. to 3 per cent., instead of 2.5 per cent. (Winters standard); where the upper 2¼-ounce from one-quart bottle are used in 14½ ounces of food, the fat percentages are practically 2.75 to 4 per cent., instead of 3 per cent. (Winters standard): where the upper six ounces from one-quart bottles are used in 28 ounces of food, the range is from 2.5 to 4 per cent., instead of 3.5 per cent. (Winters standard).

When larger quantities of top milk are used, say 8 ounces from a quart bottle in 32 ounces of food, the fat percentage will be from 2.2 to 4.1 per cent:; when 12 ounces are used in 32 ounces of food, the fat percentage will be from 2.85 to 4.35 per cent.; when 16 ounces are used in 32 ounces of food, the fat percentages will be from 3.05 to 4.2 per cent.

From this data it will be seen, at least so far as the Philadelphia milks are concerned, that *the use of diluted top milks from one-quart bottles for the very young is not attended with such serious differences of fat percentage as the differences in the fat percentages of the undiluted top milks might imply or as to justify the disuse of top milks.* At the same time the fact must be borne in mind that in cow's milk, probably, as in human milk, the ratio of fat to proteid is the highest at birth, and gradually decreases until the period of dentition is reached; for this reason the percentages of fat in cow's milk are most variable. It is well known that the most uniform milk is obtained by mixing the milk of a herd of cows rather than using the milk of a single cow. The same rule holds true with reference to the other constituents *of milk, though not to the same extent.*

The possibility of considerable variation in the percentages of sugar, fat and proteids in cow's milk, and consequently in top milks, should never be forgotten in the percentage feeding of infants. It is impossible to get absolutely exact percentages without analyzing each and every lot of milk used, and this is, of course, impracticable. As some one has wittily said: "The difficulty with those who seek scientifically exact percentage modifications of milk is that, with all their rules and tables, they fail to consider the party most deeply interested; *that is, the cow.*" *In obedience to physiologic* laws, the cow makes her milk to suit the needs of her calf, and these needs are governed by the breed, age and individuality of the calf, and doubtless other factors.

Apparently the best results in top milk infant feeding are to be had by approximating percentages; that is, by having them reasonably accurate, and then adjusting, if necessary, the relative proportions of top milk and diluents to suit the individuality of the child.

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THE FREEZING POINTS OF BLOOD AND OF URINE IN PNEUMONIA.

WITH DESCRIPTION OF A NEW METHOD.*

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The object of this study[1] was to ascertain the freezing points of the blood and of the urine in *pneumonia;* to determine the relation of such findings to the course of the disease; and to note any possible bearing the same may give with regard to the prognosis of this disease. Before discussing the methods employed and the observations made in the cases studied, it will be well to mention briefly the work of other investigators who have used cryoscopy in their researches.

A BRIEF REVIEW OF CRYOSCOPY AS USED IN MEDICINE.

As early as 1871, De Coppet[2] showed that the freezing point of water is lowered a definite amount by the addition of a molecule or proportionate quantity by weight of any soluble substance. Little was done, however, following this finding until Raoult[3] studied the freezing points of various solutions and derived his important laws. Van t'Hoff[4] later proved that equal volumes of isotonic solutions contained the same number of molecules or fragments of molecules, and have the same freezing point. Then D'Arrhenius[5] modified these laws to comply with his own *laws of solutions.* No one, however, regarded cryoscopy from a medical standpoint until *Koranyi,*[6] *regarded* by all as the father of cryoscopy, published the wonderful results of his studies on the osmotic pressure of the various fluids of the human body. Since the appearance of his articles, many investigators have worked on the subject, adding little by little to his data. Roth[7] compared the electrical conductivity with the freezing point of urine, agreeing with the findings of Koranyi.[6] Lindemann[8] studied the concentration of the urine and of the blood in renal diseases, and their relation to uremia. Claude and Balthazard[9] followed the above with experiments on the freezing point of urine in various diseases. Senator,[10] Kummel,[11] and Hamburger[12] verified the works of previous investigators. Waldvogel[13] studied the freezing points of the blood and of the urine in typhoid fever, but his results were found inconstant by Rumpel.[14] According to Ogston[15] the findings in hepatic diseases are similar to those found by Koranyi in disturbances of the kidneys. Landau[16] compared the freezing points of venous and arterial bloods, finding that stagnant and venous blood have a freezing point one or two hundredths of a degree centigrade lower than arterial blood. Sollmann[17] wrote extensively on the concentration of the urine as an aid to diagnosis. Tinker[18] studied cryoscopy as an index to renal insufficiency in surgical diseases of the kidney. The latest important use of the cryoscope was brought out by Lobenstein[19] in his work on the molecular concentration of blood and of urine in pregnancy, puerperium and eclampsia.

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* Read in the Section on Pathology and Physiology of the American Medical Association, at the Fifty-Sixth Annual Session, July, 1905.

[1] A preliminary report on this study was read before the Chicago Pathological Society, April 10, 1905.

[2] De Coppet: Annales de Clinic. Phys., 1871-72, vols. xxiii, xxiv and xxvi.

[3] Raoult: Comptes Rendus de l'Acad. des Sciences, Nov. 27, 1882.

[4] Van t'Hoff: Memoires de l'Academie rotale des sciences de Due de Randet, 21, No. 17, Stockholm, 1886.

[5] D'Arrhenius: Zeitschr. f. Physikal. Chemie, vol. i, 1887.

[6] Alex. v. Koranyi: Zeitschr. f. klin. Medicin, 1897, vol. xxxiii, pp. 1-54; 1898, vol. xxxiv, pp. 1-52.

[7] Roth: Centralblatt f. Physiologie, 1897, p. 271.

[8] Lindermann: Deutsch. Arch. f. Klin. Med., 1899, vol. lxv, p. 1.

[9] Claude and Balthazard: Jour. de Physiol. et Pathol., vol. ii, 1900, pp. 768, 804, 831, 962. Presse Méd., Feb. 17, 1900, No. 14, p. 85.

[10] Senator: Deutsch. med. Wochenschrift, 1900, vol. xxvi, p. 48.

[12] Hamburger: Centralb. f. Innere Med., vol. xxi, 1900, p. 297.

[13] Waldvogel: Deutsch. Med. Wochenschrift, 1900, p. 685, 735. Archiv f. Exper. Path. u. Pharmakologie, vol. xlvi, 1901, p. 41.

PREVIOUS CRYOSCOPIC FINDINGS IN PNEUMONIA.

Contrasted with the large amount of work done with the cryoscope on renal diseases, very little has been attempted in pneumonia. Koranyi[9] made the most important contributions. His results are briefly as will follow. He determined that the freezing point of the blood is higher, i. e., above 0.56 degrees C. in anemias and those fevers which do not interfere with the respiration. Chlorosis, tuberculosis, and the various cachexias are included under this head. Further, the freezing point of the blood is lower than 0.56 degrees C. in all diseases which are accompanied by deficient respiration or kidney function, or both. The essential difference between the quality of the blood and of the urine in cases with lessened aëration and that in renal insufficiency, is that in the former the low freezing points are raised by the administration of acids. Where both kidney and lung functions are deficient, as in heart cases, the great concentration of the blood can be decreased by the exhibition of acids, but can not be brought to normal. The freezing point of the blood may be essential in diagnosis between typhoid and pneumonia, for, if the freezing point is lower than 0.56 degrees C., the case is very likely pneumonia. On the other hand, should it be higher than 0.56 degrees C., typhoid fever is more probable. In pneumonia the blood change can be corrected by administration of acids. In regard to the urine, the freezing point in anemias is above 1.4 degrees C. With recovery the freezing point is lower. In increased kidney circulation the increase in salt excretion is greater than that of other molecules; therefore, the quotient in such cases of the freezing point of urine divided by NaCl per cent. secreted is low. In slowed circulation the salt secretion is decreased more than the other molecules. Hence the freezing point of urine divided by NaCl per cent. rises in value. If, in fevers, the freezing point of urine divided by NaCl per cent. is lower than 1.7, malaria is indicated. If this quotient is greater than 1.7, malaria is contraindicated.

Lindemann[8] found that the concentration of the blood increases if the excessive substances are not eliminated from the blood, even though there is no absorption by the tissues of the body. Sollmann[17] notes that the height of a fever has no special influence on the urine, and that the same results are found when a healthy person is on a milk diet. He found that in heart diseases, pneumonia, ascites, etc., with cardiac weakening, the freezing point of the urine is lowered. Claude and Balthazard[9] found that the volume of urine excreted in pneumonia is decreased during the disease up to the crisis, when it rapidly increases. The freezing point, however, is markedly lower, due to the increased concentration of the urine. The lowering is due, however, to the great increase in elaborated molecules excreted, and not to the chlorids, the latter having diminished. Three days after the defervescence of the fever, the reverse conditions are present, that is, the amount of urine is increased, the freezing point becomes normal, while the chlorid secretion increases at the expense of the non-chlorid molecules.

METHODS EMPLOYED.

A. *To Determine the Freezing Point of Urine.*—This is done usually by a Beckmann apparatus or one of its modifications. A thermometer, capable of being read to 0.01 degrees C. is supported by a rubber stopper in a large test tube, A, and should be at least 5 millimeters distant from the walls of the test tube. The thermometer should be graduated from 1 degree centigrade above, to 4 or 5 degrees below the freezing point. A stirring rod, preferably one of platinum, should pass through the cork holding the thermometer, and in a spiral around the latter. This test tube should be fitted by means of a rubber stopper into a larger test tube, B, which in turn is supported in a jar containing the freezing mixture, the temperature of which should be at least —5 degrees C. An air space is thus left between the freezing mixture and the solution to be frozen, insuring gradual cooling. The thermometer should be tested daily in a 1 per cent. solution of sodium chlorid, the freezing point of which is known.

To determine the freezing point of a solution, 10 cubic centimeters of it are placed into test tube A, and the apparatus set up as outlined above. The fluid to be tested should always be cooled down near the freezing point before beginning the experiment, and constant stirring is necessary. The mercury sinks at first considerably below the freezing point, and then, as freezing occurs, heat is given off and the mercury rises again to the solidifying temperature, which result is tabulated when the column of mercury has remained stationary some thirty seconds. It is safest to remove tube A after the first result, allowing the ice of the tested liquid to melt, and then retest. These two results should agree to 0.004 degrees C., although .02 degrees C. is sufficiently accurate, ordinarily.

The method described above is simple, easy, and rapid. The determination does not take more than ten minutes after the apparatus has been set up and standardized. The necessity of testing the thermometer daily is rather annoying. More simple instruments with fixed freezing points have been suggested for this purpose. These are not quite as delicate, but are sufficiently accurate for clinical work on urine.

When the urine contains considerable urates these are thrown out of solution by the cooling, so that the observed concentration is lessened by the amount of these precipitated salts. This quantity is, however, so small that it may be safely neglected; in fact, it is not easily possible to make any correction. It would not do to dilute the urine, since this alters the dissociation.

B. *To Determine the Freezing Point of Blood.*—Having decided that it would be impracticable to get 10 cubic centimeters of blood daily from pneumonia patients, the method of Koeppe[20] for determining the osmotic pressure of the blood by means of the hematocrit was used as modified by Richard Sommer[21] to calculate the freezing point of the blood. His explanation of the method follows:

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[14] Rumpel: Munchener med. Wochenschrift, vol. xlviii, 1901, p. 223.

[15] Ogston: Lancet, 1901, vol. ii, p. 1252.

[11] Kummel: Munchener med. Wochenschrift, Oct. 30, 1900, p. 1525.

[16] Landau: Deut. Archiv. f. klin. Med., vol. lxxviii, Nos. 5 and 6, 1903, p. 438.

[17] Sollmann: Amer. Medicine, vol. iv, No. 17, 1902, p. 656.

[18] Tinker: Johns Hopkins Hosp. Bulletin, vol. xiv, No. 147, 1903, p. 162.

[19] Lobenstein: Am. Med., vol. viii, No. 16, p. 685.

General Principles: The determination is made according to the laws of Van t'Hoff.

(*a*) The osmotic pressure of the blood corpuscles is the same as that of the plasma, because a plasmolysis or a plasmoptysis takes place.

(*b*) If the blood corpuscles are brought into solutions of different osmotic pressures they change their volume in a definite manner until the osmotic pressure of the blood corpuscles is the same as the solution in which they are placed.

(*c*) The osmotic pressure is proportional to the concentration of the solution.

(*d*) The lowering of the freezing point of a solution is proportional to the concentration of the solution (law of Blagden).

(*e*) The lowering of the freezing point of a solution is proportional to the osmotic pressure of the same (law of Van t'Hoff).

(*f*) A solution which holds in solution a grammolecule to the liter has an osmotic pressure of twenty-two and thirty-seven hundredths approximately (Van t'Hoff).

Apparatus: (1) Graduated hematocrit tubes which differ from the ordinary in that the tube is enlarged proximally into a little bulb. The tube is graduated into hundredths. The readings are taken with a hand lens, with which one can with accuracy estimate one-quarter of one of the graduations. The lumen of the tube is so small that one drop of blood is enough to fill this tube several times.

(2) Electric centrifuge, which must revolve very evenly and rapidly.

(3) An instrument to get blood from, preferably, the ear. The regular precautions are taken as in all blood work.

(4) A number of clean watch glasses to receive standard solutions. Care must be taken not to allow solutions to come in contact with other soluble substances.

(5) A hand lens to read the graduation on the tube.

(6) A Beckmann freezing apparatus for determining the freezing points of the standard solutions.

(7) Sterile cedar oil is used in order to prevent the blood from being mixed with foreign substances which may hasten coagulation of the blood.

(8) Standard solutions of certain chemicals which do not act on the blood corpuscles when in solution. The experimenter decides the one he shall use. The substances that are employed commonly are cane sugar, sodium chlorid, potassium bichromate and potassium oxalate. Eijkmann uses sodium chlorid; Koeppe, cane sugar, and Sommers, potassium bichromate. The cane sugar method is the best for the accurate worker, but the solutions are hard to keep. It is understood that the materials must be chemically pure. Each one of these solutions has advantages and disadvantages. For potassium bichromate it can be said that it does not coagulate the blood nor destroy the corpuscles. Since the coagulation of the blood is harmful to the experiment. it is best for the beginner to use this salt. The solutions last long when scaled. A weak solution containing twenty grams to the liter and a strong solution with fifty grams to the liter are used. The freezing point of each is obtained and marked on the flask.

Procedure (according to Koeppe):[20] In a clean hematocrit tube a little cedar oil and immediately after a little blood are aspirated. The tube is immediately closed without reading the graduation and centrifuged. When the centrifuging is completed, there will be three definite lines to read off, namely: Blood corpuscles as the lowest part, plasma as a middle part, and the cedar oil on top. The quantity of blood taken, then, in the first place will be the sum of blood cells and plasma. Tubes used in this manner are named, according to Koeppe, "oil pipettes." Such a method is employed when one does not wish to mix the blood with the other solutions. When one dilutes the blood with some of the above-mentioned diluents, the unoiled, clean, dry tubes are used, and the operation is as follows: Blood is drawn into one of the tubes, with the condition that it is not to be drawn above the hundredth mark; the tip of the tube is then wiped, and the quantity read off accurately. Then the point of the tube is immersed in one of the standard solutions in the watch glasses, and a quantity of the latter is very slowly sucked up. There should be six or ten times as much of the solution as there is blood. The more of the diluting fluid employed the more accurate the results will be. Then the tube with the mixture is well shaken and centrifuged until two or three successive readings correspond. Ordinarily it takes about three minutes to centrifuge sufficiently. The readings are then placed into a table similar to the following, and the deductions found later:

	n=volume of blood taken	m=volume of blood corpus.	$\frac{100\,m}{n}$ = per cent. blood corpus.
1. "Oil Pipetta."	....	....	....
2. Blood diluted with weak solution ...	....	....	....
3. Blood diluted with strong solution..	....	....	....

To have a check on one's results, two or three such tests should be made in each case. (Koeppe filled eight or nine of these tubes in ten minutes, ready for the centrifuge.) Then all the tubes are centrifuged at one time, and the various tests on the same case should be alike. The volume per cent. is then figured out from the results according to the formula, 100 *m* divided by *n*. in which *m* is the volume of blood corpuscles and *n* the volume of the blood taken.

Calculation of the Lowering of the Freezing Point from These Results (Sommer): Following are tabulated results, taken, as an example, when potassium bichromate solutions, with a freezing point of —0.335° C. for the weak and —0.81° C. for the strong solutions are used:

	n.	m.	$\frac{100\,m}{n}$
1	52	26	50 per cent.
2	69	39	56.52 per cent.
3	66	27	40.91 per cent.

In the mixture with the weak fluid, the blood corpuscle per cent. is 56.52, while with a strong solution it is 40.9 per cent. The dissimilarity between the freezing points of the two solutions is .455 C., and this corresponds to a difference of 15.61 per cent. in the volumes of blood corpuscles in Experiments 2 and 3. Therefore, 1 per cent. of this variation is equivalent to 0.029148° C. of the diversity of the freezing points of the two diluting fluids. Since the difference between the volume of the blood corpuscles with the weak solution and the undiluted blood is 6.52 per cent., the variation in the freezing points between these samples of blood will be 6.52 times —0.029148° C. = —0.190° C. We must add this difference to the solidifying point of the weak solution, i e., we must add —0.190 to 0.355 = 0.545° C., which is, therefore, the freezing point of the undiluted blood. In order to bring these results into a formula, we will use the following symbols commonly employed in cryoscopy:

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[20] Koeppe: Phys. Chemie, in der Medizin, Wien, 1900.

[21] Sommer, R.: Written communications.

[22] Beckman: Zeitschr. f. Phys. Chemie, vol. viii, p. 323.

d = Freezing point of the blood.
d_1 = Lowering of the freezing point of the weak solution.
d_2 = Lowering of the freezing point of the strong solution.
v = Per cent. of volume of the blood corpuscles in undiluted tube.
v_1 = Per cent. volume of the blood corpuscles when the blood is mixed with the weak solution.
v_2 = Per cent. of volume when it is diluted with the strong solution.

$$\text{Therefore } d = d_1 + \frac{(d_2 - d_1)\ (v_1 - v)}{(v_1 - v_2)}$$

In the illustration above:

$d_1 = 0.355°$ C.
$d_2 = 0.81°$ C.
$v^2 = 50$ per cent.
$v_1 = 56.52$ per cent.
$v_2 = 40.91$ per cent., and
$d = -0.545°$ C.

Precautions: 1. In using the Beckmann[22] apparatus for urine, the usual well-known precautions should be observed.

2. The ordinary precautions of asepsis used in all blood examinations should be adhered to.

3. In drawing up the blood into the tube, care should be taken not to permit it to pass beyond the hundredth mark, for accurate reading would then be impossible. If this accident occurs, the tube must be laid aside and another taken.

4. The diluting solution should be drawn in immediately after the blood and thoroughly shaken before placing the same into the hematocrit arm.

5. At least five minutes must elapse between mixing and sedimenting, to allow for full osmosis. Ten minutes is safe at the other extreme.

6. Since it is impossible to obtain accurately the same amount of blood each time, the per cent. volume should be figured in decimals to four places.

7. Before using the tubes they should be thoroughly cleansed, rinsed with water, then with potassium hydrate, and this followed successively by water, alcohol and ether and finally dried over a flame. In order to dissolve the blood corpuscles after centrifuging, a weak acetic acid solution may be used, followed by the above routine.

8. The freezing points of the standard solutions must be frequently taken to insure uniform results.

9. The point of the hematocrit tubes should be wiped dry before clamping, and the rubber washers should fit tightly to the ends of the tubes when clamped.

OBSERVATIONS ON TWENTY-FOUR CASES OF PNEUMONIA.

Before beginning the determination of the freezing points of the blood and of the urine of pneumonic patients, experiments were made on ten normal males between the ages of 20 and 40. These results were looked on as controls.

	Freezing point of blood.	Urine.
Case 1....	—.563 degrees C.	—1.53 degrees C.
Case 2....	—.566 degrees C.	—1.88 degrees C.
Case 3....	—.533 degrees C.	—1.77 degrees C.
Case 4....	—.544 degrees C.	—2.34 degrees C.
Case 5....	—.554 degrees C.	—2.16 degrees C.
Case 6....	—.558 degrees C.	—1.93 degrees C.
Case 7....	—.569 degrees C.	—2.06 degrees C.
Case 8....	—.55 degrees C.	—1.94 degrees C.
Case 9....	...557 degrees C.	—1.73 degrees C.
Case 10....	—.554 degrees C.	—1.16 degrees C.

(Twenty-four-hour specimens of urine were obtained throughout these experiments.)

From this it will be seen that the freezing point of the blood in these cases ranged from —0.533° C. to —0.569° C., average —0.552° C., while that of the urine ranged from —1.16° C to —2.34° C., average —1.8° C.

In comparing the results recorded in using the hematocrit method described above with those found when using the method employing the Beckmann apparatus, it was found that the freezing point of the blood, according to the latter method, was slightly higher than that obtained by the former. The difference is, no doubt, due to the accuracy of the former in carrying out the decimals to five places in all cases.

Appended are the tabulated results of twenty-four cases of pneumonia, taken under observation. These patients were watched daily. The freezing point of the blood and of the urine, the quantity of urine, the specific gravity of the urine and the amount of urea were recorded. Note was made of the casts and albumin when present.

Case 1.— S. S., ward 22; No. 74. Male, 32 years old. Right upper and middle lobes consolidated. Milk diet; stimulating treatment only. The course of the disease was moderate.

Day.	Blood freezing.	Urine freezing.	Am't.	Sp. gr.	Urea.	Temp.	Pulse.	Resp.
1....	—.60		Delirious.			102.6	102	32
2....	—.5976		Delirious			102.4	98	28
3....	—.585	—2.73	850	1023	3.1	100	100	28
4....	—.594	—2.64	890	1022	3	100	108	24
5....	—.602	—2.67	830	1023	2.9	102	100	28
7....	—.594	—2.57	1020	1021	2.9	100.2	92	28
8....	—.5617	—2.15	1200	1019	2.3	100.4	100	28
9....	—.563	—1.93	1130	1019	2.3	100.4	98	28
12....	—.547	—1.80	1400	1016	1.9	99	84	20

This patient was seen about five days after admission to the hospital. No chill had been noted. The course of the disease was moderate without complication. The temperature receded by lysis. The freezing point of the blood was lower than normal throughout the course of the disease. The freezing point of the blood rose as the temperature fell, not reaching normal until several days after the temperature. The urine followed the same course.

Case 2.—Y. F., Ward 22, No. 72. Male, 35 years old. Right lower and middle lobes involved. Milk diet; stimulating treatment. The course of the disease was moderate.

Day.	freezing. Blood	freezing. Urine	Am't.	Sp. gr.	Urea.	Temp.	Pulse.	Resp.
1....	—.574	....	....	....	..	103	108	36
2....	—.60	—2.36	1020	1019	2.8	103	120	40
3....	—.5897	—2.58	970	1021	2.9	102.6	120	44
4....	—.5976	—2.96	860	1023	3.1	101.8	126	48
5....	—.593	—.287	1300	1021	2.9	99	96	48
7....	—.588	—2.59	1250	1019	2.7	100	88	28
8....	—.563	—2.03	1230	1018	2.4	99.6	92	32
9....	—.557	—1.79	1200	1018	2.2	...	Normal.	..
10....	—.553	—1.77	1330	1019	2	...	Normal.	..
14....	—.559	—1.59	1450	1017	1.7	...	Normal.	..

This patient was seen the second day after admission, about five days after the chill. His temperature was not very high. The freezing point of the blood and of the urine were moderately lower throughout the disease, rising slightly above the normal after the crisis, *then receding to normal.*

Case 3.—K. H., Ward 24, No. 3. Male, 32 years old. Upper right lobe involved. Milk diet; stimulating treatment. Moderately severe course.

Day.	Blood Freezing.	Urine Freezing.	Am't.	Sp. gr.	Urea.	Temp.	Pulse.	Resp.
1....	—.627		Delirious.			102.8	110	34
2....	—.603		Delirious.			103	104	32
3....	—.594		Delirious.			102.8	120	34
4....	—.602		Delirious.			97.9	96	30
5....	—.583		Delirious			98.8	102	28
7....	—.577	—2.98	1050	1022	2.7	98.4	92	24
8....	—.547	—1.51	1230	1018	2	99	88	24
9....	—.548	—1.63	1420	1019	2	Normal.	Normal.	..

This patient was seen the second day after admission. The freezing point of the blood was considerably lower. The patient was delirious throughout until after the crisis, after which the freezing point of the blood rose to normal within a few days, as did also that of the *urine*. No specimen of urine could be obtained until after the crisis, but when obtained, the freezing point was considerably lower than it was after convalescence.

Case 4.—W. H., Ward 22, No. 34. Male, 27 years old. Right upper and middle lobes consolidated. Milk diet; stimulating treatment. Mild course.

Day.	Blood freezing.	Urine freezing.	Am't.	Sp. gr.	Urea.	Temp.	Pulse.	Resp.
1....	—.564	....	....	....	..	102	112	40
2....	—.587	—2.21	850	1020	2.6	100	100	44
3....	—.5628	—1.98	920	1019	2.5	102	100	36
4....	—.574	—2.37	890	1021	2.9	97.2	90	36
5....	—.585	—2.09	980	1019	2.6	98.6	84	28
7....	—.542	—1.76	1150	1018	2.3	98.6	72	24
8....	—.54	—1.71	1080	1018	2.1	Normal.	...	20
9....	—.542	—1.82	1200	1017	2.3	Normal.	...	..
10....	—.541	—1.76	1490	1018	2.2	Normal.	...	..
13....	—.557	....	....	....	..	Normal.	...	..

A very mild case, seen five days after he had the chill. The freezing point of the blood was only slightly lower throughout, coming up to normal, as in the preceding cases.

Case 5.—F. F., Ward 24, No. 40. Male, 24 years old. No definite area of consolidation. Milk diet; stimulating treatment.

Day.	Blood freezing.	Urine freezing.	Am't.	Sp. gr.	Urea.	Temp.	Pulse.	Resp.
1....	—.585	....	....	....	..	103	104	34
2....	—.57	—1.95	1020	1019	2 8	102	100	32
3....	—.563	—2.49	900	1021	2.9	100	90	30
4....	—.558	—2.37	920	1020	2.7	98.2	96	28
5....	—.552	—2.01	1030	1018	2.4	98.4	94	24
7....	—.533	—1.47	1270	1018	2	98.6	82	22
8....	—.536	—1.68	1150	1019	2	Normal.	Normal.	..
9....	—.541	—1.73	1090	1018	2.2	Normal.	Normal.	..
12....	—.55	—1.75	1200	1017	2	Normal.	Normal.	..

This patient was seen the day after admission. The course of the disease was typical, although no definite area of consolidation was found. The temperature fell by crisis the fourth day after coming under observation. The freezing points of the blood and of the urine were lower, but not markedly so.

Case 6.—C. J., Ward 10, No. 8. Male, 37 years old. Upper and middle lobes involved. Light diet; stimulating treatment.

Day.	Blood freezing.	Urine freezing.	Am't.	Sp. gr.	Urea.	Temp.	Pulse.	Resp.
1....	—.594	....	....	....	..	103.2	104	52
2....	—.584	—3.06	750	1025	3.2	101.2	112	36
3....	—.582	—2.93	890	1023	2.9	100.6	112	32
4....	—.585	— 2 87	850	1023	2.9	98.6	104	28
5....	—.582	—2.75	970	1020	2.5	98.4	98	26
6....	—.562	—2.24	1250	1017	2.4	99.6	92	30
8....	—.558	—1.79	1170	1018	2.2	99	96	26
9....	—.557	—1.93	1200	1018	2.3	Normal.	..	Normal
13....	—.562	....	....	....	..	Normal.	..	Normal

This patient had a high temperature, but no definite areas of consolidation were noted. The freezing points of the blood and of the urine were somewhat lower than normal, following the same course as in the foregoing cases.

Case 7.—W. A., Ward 24, No. 73. Male, 29 years old. Both lower lobes consolidated. Milk diet; stimulating treatment.

Day.	Blood freezing.	Urine freezing.	Am't.	Sp. gr.	Urea.	Temp.	Pulse.	Resp.
1....	—.589	....	....	....	..	102.4	100	30
2....	—.596		Delirious.			104	98	40
4....	—.611		Delirious.			103.2	120	42
5....	—.609		Delirious.			103.4	114	36
6....	—.617	—3.25	1100	1015	2.9	102	116	36
7....	—.591	—3.19	1200	1015	3	100	110	28
8....	—.593	—3.18	1250	1016	3	98	84	28
9....	—.559	—2.49	1560	1012	2.4	98.8	94	26
11....	—.541	—1.86	1400	1014	2	Normal.	Normal.	..
15....	—.563	....	....	....	..	Normal.	Normal.	..

(Casts and albumin.)

A typical case of pneumonia, with extensive involvement of both lower lobes of the lungs. The patient was seen early in the course of the disease. The freezing point of the blood gradually fell to reach its lowest point before the crisis, when, as the temperature descended, the freezing point of the blood rose to normal.

Case 8.—K. G., Ward 24, No. 1. Male, 27 years old. No definite area of consolidation. Milk diet; stimulating treatment.

Day.	Blood freezing.	Urine freezing.	Am't.	Sp. gr.	Urea.	Temp.	Pulse.	Resp.
1....	—.573	....	....	....	..	102.6	104	32
2....	—.599	....	....	....	..	102.4	102	30
3....	—.593	—3.06	1020	1023	2.8	101.6	94	30
4....	—.594	—3.07	890	1023	2.9	102.4	110	32
6....	—.589	—3.01	850	1024	3	98	94	24
7....	—.561	—3.00	1000	1019	2.7	98.6	88	22
8....	—.555	—2 37	1350	1015	2	98.8	84	20
9....	—.548	—1.99	1700	1016	2	98.4	80	22
10....	—.551	—1.75	1500	1015	1.8	98.6	82	20
11....	—.56	—1.87	1400	1016	2	Normal.	Normal.	..

This case, although not so severe as Case 7, followed the same course and gave the same results.

Case 9.—N. A., Ward 24, No. 4. Male, aged 19. Right upper lobe extensively involved. Milk diet; stimulating treatment.

Day.	Blood freezing.	Urine freezing.	Am't.	Sp. gr.	Urea.	Temp.	Pulse.	Resp.
1....	—.587	....	....	....	..	104	116	30
2....	—.589		Delirious.			103.2	110	38
3....	—.591		Delirious.			104.4	124	52
5....	—.594		Delirious.			99.2	80	30
6....	—.558	—2.08	700	1021	2.7	99	60	26
7....	—.562	—1.87	900	1020	2.4	99.2	66	28
8....	—.554	—1.83	1050	1018	2.2	Normal.	Normal.	..
9....	—.543	—1.92	1020	1019	2.3	Normal.	Normal.	..
10....	—.541	—2.01	1160	1021	2.5	Normal.	Normal.	..
13....	—.552	....	....	....	..	Normal.	Normal.	..

A very severe case of short duration. The freezing point of the blood and of the urine followed the same course as in the other cases.

Case 10.—L. J., Ward 24, No. 38. Male, 18 years old. No definite area of consolidation. Milk diet; stimulating treatment.

Day.	Blood freezing.	Urine freezing.	Am't.	Sp. gr.	Urea.	Temp.	Pulse.	Resp.
1....	—.602	....	....	....	..	104.8	112	30
2....	—.569	—1.93	950	1022	2.6	104	120	28
3....	—.5827	—2.23	850	1023	2.7	104.2	120	40
5....	—.538	—1.23	1200	1017	2	99	94	30
6....	—.549	..1.39	1100	1017	2	99.2	80	28
7....	—.543	—1.55	1060	1018	2	98.9	80	24
8....	—.547	—1.69	1080	1018	2	Normal.	Normal.	..
9....	—.546	—1.71	1440	1018	2.3	Normal.	Normal.	..
10....	—.549	—1.67	2100	1017	2	Normal.	Normal.	..
11....	—.558	....	....	....	..	Normal.	Normal.	..

This patient had a high temperature, but no definite areas of consolidation were noted. The freezing points of the blood and of the urine were somewhat lower than normal, following the same course as in former instances.

Case 11.—E. J., Ward 24, No. 79. Male, 47 years old. Lower left lobe consolidated; also had pleurisy on left side.

Day.	Blood freezing.	Urine freezing.	Am't.	Sp. gr.	Urea.	Temp.	Pulse.	Resp.
1....	—.611	....	....	....	..	104	132	36
2....	—.607		Delirious.			102.4	115	28
3....	—.623	....	....	....	..	102.8	106	28
4....	—.613	—3.59	870	1024	3.1	98.8	82	22
5....	—.617	—3.59	720	1028	3.4	99.4	90	20
6....	—.587	—3.19	820	1018	3.1	98.6	90	20
7....	—.549	—2.05	1250	1014	2.6	98 6	80	24
11....	—.555	—1.96	1400	1015	2	Normal.	Normal.	..

A very severe case; high temperature and rapid respiration. The freezing point of the blood was considerably lower, as was also that of the urine. The same general course was present, however, as in preceding cases, relative to the lowering of the freezing points of the blood and of the urine.

Case 12.—M. A., Ward 22, No. 38. Male, 30 years old. No definite area of consolidation. Milk diet; stimulating treatment.

Day.	Blood freezing.	Urine freezing.	Am't.	Sp. gr.	Urea.	Temp.	Pulse.	Resp.
1....	—.593	....	....	....	..	103.4	120	48
2....	—.597	—3 11	680	1029	2.9	98	96	32
3....	—.591	—3.15	820	1026	2.8	98	86	30
4....	—.576	—2.97	1230	1021	2.4	98.8	70	22
5....	—.555	—1.75	1400	1017	2	98 8	72	22
6....	—.545	....	....	....	..	Normal.	Normal.	..
9....	—.546	....	....	....	..	Normal.	Normal.	..

This patient came into the hospital late in the course of the disease, the crisis occurring on the same day. The same findings obtained as in the other cases.

Case 13.—K. J., Ward 22, No. 28. Male, 46 years old. Right lower lobe consolidated. Stimulating treatment.

Day.	Blood freezing.	Urine freezing.	Am't.	Sp. gr.	Urea.	Temp.	Pulse.	Resp
1....	—.591	....	....	....	..	102.4	112	40
2....	—.587	—2.805	820	1021	2.5	101.8	104	36
3....	—.593	—2.96	760	1022	2.8	97.6	100	32
4....	—.591	—3.05	930	1026	2.9	99.6	88	32
5....	—.555	—3.02	1230	1021	2.3	99.4	98	28
7....	—.541	—2.47	1450	1015	2	99	100	30
10....	—.543	....	....	....	..	98.8	96	22

(Anemic and weak.)

This patient was seen the day after admission to the hospital. The freezing points of the blood and of the urine were low. It was noted that immediately after the crisis both were lower than during the disease.

Case 14.—D. J., Ward 24, No. 30. Male, 42 years old. Right lower and middle lobes. Stimulating treatment.

Day.	Blood freezing.	Urine freezing.	Am't.	Sp. gr.	Urea.	Temp.	Pulse.	Resp.
1....	—.599	....	....	....	..	103.2	100	36
2....	—6.05		Delirious.			104 4	110	44
3....	5.94	—2.14	950	1021	2.7	102.4	90	34
4....	—.583	—2.10	1020	1021	2.8	101	98	30
5....	—.556	—1.78	1300	1017	2.4	99.4	90	26
6....	—.55	—1.60	1500	1015	2	98.6	86	24
7....	—.556	—1.70	1650	1014	2	98.4	80	26
12....	—.557	....	....	....	..	...	...	..

A severe case, the patient being delirious during the first two or three days. The freezing point of the blood was low. The patient made an uneventful recovery. Freezing points of the blood and urine came to normal, as in preceding cases.

Case 15.—D. M., Ward 24, No. 32. Male, 33 years old. Right lower lobe involved; continuous salt irrigation. Stimulating treatment.

Day.	Blood freezing.	Urine freezing.	Am't.	Sp. gr.	Urea.	Temp.	Pulse.	Resp.
1....	—.583	....	....	....	..	100.2	100	36
2....	—.587	....	....	....	..	101.8	100	28
4....	—.585	—2 25	920	1015	2.6	99.8	84	26
5....	—.571	—2.15	1020	1017	2.7	99.6	88	30
6....	—.555	—1.85	1300	1014	2.2	99.2	76	24
10....	—.560	—1.80	1700	1015	2	98.6	78	22

A mild case. The same course and findings existed as in former cases. This patient also made an uneventful recovery.

Case 16.—H. C. H., Ward 22, No. 68. Male, 42 years old. Right upper lobe consolidated. Evidences of tuberculosis. Milk diet; stimulating treatment. Anemic.

Day.	Blood freezing.	Urine freezing.	Am't.	Sp. gr.	Urea.	Temp.	Pulse.	Resp.
1....	—.603	....	...	....	..	102	120	34
2....	—.604	—2.47	900	1018	2.8	103.2	100	36
3....	—.618	—2.13	950	1019	3.1	100.2	98	36
4....	—.59	—2.39	600	1020	3.2	99.8	90	36
5....	—.60	—2.53	250	1019	3	100	84	28
7....	—.554	—2.11	870	1018	2.8	100	88	28
8....	—.532	—2.02	750	1019	2.6	100.5	90	28
9....	—.533	—1.97	830	1020	2.5	100.2	92	28
12....	—.535	....	...	....	..	99.6	86	26

Another typical case of pneumonia. The freezing point of the blood was low, as was that of the urine, following the same course as the preceding, but it is to be noted that evidences of tuberculosis were found, and therefore the higher freezing point of the blood during convalescence (Koranyi[8]).

Case 17.—V. B., Ward 24, No. 36. Male, 27 years old. Right lower lobe consolidated. Evidences of tuberculosis. Milk diet; stimulating treatment.

Day.	Blood freezing.	Urine freezing.	Am't.	Sp. gr.	Urea.	Temp.	Pulse.	Resp.
1....	—.589	—2.93	750	1023	2.7	102	88	32
3....	—.593	—2.97	720	1024	2.8	102.6	102	28
4....	—.591	—2.87	800	1023	2.8	100	96	28
5....	—.616	—3.03	690	1025	2.9	100.6	95	24
6....	—.607	—3.14	870	1029	3.2	102	96	28
7....	—.608	—3.02	1020	1021	3.1	100	80	26
8....	—.572	—2.61	970	1019	3	99	97	24
10....	—.53	—2.47	1200	1015	2.6	99.2	88	28
13....	—.534	....	....	....	..	99.6	92	26

This patient was seen a day after admission with a typical pneumonia history. The freezing points of the blood and of the urine were low. They gradually descended until the temperature began to fall, when they gradually rose to normal. It will again be noted that this patient had evidences of tuberculosis, which will account for the rather high freezing point of the blood after crisis and during convalescence.

Case 18.—B. Z. V., Ward 10, No. 22. Male, 45 years old. Right lower lobe consolidated. Chill several days before admission.

Day.	Blood freezing.	Urine freezing.	Am't.	Sp. gr.	Urea.	Temp.	Pulse.	Resp.
1....	—.593	....	....	....	..	104.2	124	30
2....	—.619	—3.29	530	1032	3.3	103.5	132	30
3....	—.601	—3.24	720	1028	3.2	99.2	96	28
4....	—.587	—2.51	1120	1019	2.6	98.8	80	24
5....	—.593	—2.60	1050	1021	2.8	103.8	140	44
7....	—.644	—2.91	870	1023	2.9	103.2	132	38
8....	—.689		Delirious.			103 2	128	40
9....	—.838		Delirious.			104.6	148	48

This patient was seen the day after entrance into the hospital, with the right lower lobe consolidated, high temperature and high pulse. The freezing points of the blood and of the urine were low. On the third day the patient had a crisis and the freezing point of the blood and of the urine began to approach normal. Two days later the patient had a relapse, with high temperature, high pulse, and rapid respiration. Physical examination now showed an extensive consolidation of the right lung, anteriorly and posteriorly from above down to the lower border of the scapula. The patient became considerably worse and delirious. On the seventh day the freezing point of the blood was very low. The patient was cyanotic and oxygen had to be administered. The patient died the night of the ninth day. The freezing point of the blood preceding his death was —0.838; temperature, pulse and respiration were very high.

Case 19.—A. G., Ward 10, No. 25. Male, 50 years old. Upper left lobe extensively consolidated. Milk diet; stimulating treatment.

Day.	Blood freezing.	Urine freezing.	Am't.	Sp. gr.	Urea.	Temp.	Pulse.	Resp.
1....	—.573	....	...	....	..	103	112	48
2....	—.592	—2.87	700	1023	3.1	102.2	96	36
3....	—.603	—3.17	560	1027	3.5	102.8	86	48
4....	—.813	—3.21	430	1032	3.6	102.8	120	46
5....	—.834	....	...	....	..	102.8	140	48
6....		Patient died.				103.6	138	52

The last blood for estimation was taken an hour before death—oxygen was administered for last twenty-four hours following venesection, withdrawing 500 c.c. blood and injecting 850 c.c. normal salt. In this case it was noted that on the fourth day the patient was very cyanotic, and since the pulse was slow a venesection was performed, withdrawing 500 cubic centimeters of blood. Eight hundred and fifty cubic centimeters of salt solution were then injected. It will be noted that this did not alter the results of the freezing of the blood, the same descending nevertheless. Oxygen was administered during the last twenty-four hours. Patient died of heart failure. The freezing point of the blood before death was remarkably low.

Case 20.—J. O., Ward 22, No. 9. Male, 44 years old. Left and right upper lobes involved. Milk diet; stimulating treatment.

Day.	Blood freezing.	Urine freezing.	Am't.	Sp. gr.	Urea.	Temp.	Pulse.	Resp.
1....	—.579	....	...	....	..	102	120	40
2....	—.694	—2.27	830	1023	2.7	103.2	124	44
3....	—.835	—2.31	850	1023	2.8	104.6	136	48

(Patient died next morning.)

While not so severe on entering, the freezing point of the blood was not very low, but it gradually descended so that on the day before his death it was very low.

Case 21.—Ward 24, No. 65. Male, colored, 35 years old. Right lower lobe consolidated. Milk diet; stimulating treatment.

Day.	Blood freezing.	Urine freezing.	Am't.	Sp. gr.	Urea.	Temp.	Pulse.	Resp.
1....	—.588	....	No specimen.		....	102	120	38
2....	—.687		Delirious.			102.6	108	52
3....	—.811		Delirious			103.2	120	48

Became suddenly worse and died. Case very similar to the preceding.

Case 22.—P. C., Ward 10, No. 3. Male, colored, 30 years old. Lower left lobe consolidated. Venesection and injection of salt solution 500 c.c. and 600 c.c. on entrance. Stimulating treatment. Syphilitic history:

Day.	Blood freezing.	Urine freezing.	Am't.	Sp. gr.	Urea.	Temp.	Pulse.	Resp.
1....	—.615		No specimen.			103.6	148	36
2....	—.62	....	...	....	..	102	132	42
3....	—.73	—1.13	500	1012	1.5	104.5	70	50

Another fatal case, very severe, and brief in its course. The patient died on the third day after admission. The freezing point of the blood became very low before death. The patient died of heart failure.

Case 23.—M. J., Ward 10, No. 6. Male, 20 years old. Lower left lobe involved. Spread to upper lobe and right lower lobe third day.

Day.	Blood freezing.	Urine freezing.	Am't.	Sp. gr.	Urea.	Temp.	Pulse.	Resp.
1....	—.591	....	...	....	..	101.8	106	28
2....	—.607	—2.05	830	1026	2.8	102.4	122	32
3....	—.608	—3.03	880	1026	2.9	103.4	120	30
4....	—.715	—3.10	720	1030	3.2	103	124	44
5....	—.837		Delirious.			104.3	140	56

Patient died from exhaustion and heart failure. Oxygen was administered before death. Died the night after last record given. A very severe course. Patient died on the fifth day, showing same findings as preceding fatal cases.

Case 24.—O. C., Ward 24, No. 78. Male, 49 years old. Right lower and middle lobes consolidated. Normal salt per rectum every four hours. Milk diet; stimulating treatment.

Day.	Blood freezing.	Urine freezing.	Am't.	Sp. gr.	Urea.	Temp.	Pulse.	Resp.
1....	—.611	....	...	....	..	102.4	136	32
2....	—.623	Involuntaries.		....	..	105.3	140	40
3....	—.702	—3.25	720	1031	3.4	103.8	120	36
5....	—.728	—3.24	350	1030	3.2	106	144	42

(Patient was delirious. Died 3 a. m. next morning.)

This was a very severe case. The patient died on the fifth day after admission to the hospital. It will be noted that the freezing points of the blood and urine in this case were low, the freezing point of the blood being lowest before death. The patient died of heart failure.

The chlorids in the urine were also estimated in the above experiments. The following method (approximate) was used:

Urine, 5 c.c.................
HNO_2, 10 gtts................
$Agno_3$ 10 per cent. sol., 2 c.c..
} Shake, and note amount of precipitate.

The chlorids were found markedly diminished in amount up to the crisis, when they rapidly increased to above normal quantity, to recede later during convalescence.

In reviewing and summarizing the above data, it is to be noted that all the patients were males between the ages of 18 and 50, and were apparently healthy before taken sick with pneumonia. This excludes, therefore, differences which might be peculiar to the disease as manifested in children and old age. All the patients were on essentially the same diet: Milk, and later broths and plenty of water. As to the treatment, only regular stimulating treatment was given, consisting of strychnia, whisky or digitalis. A few mentioned had salt irrigations. I believe that, in view of the results tabulated above, the following conclusions will be considered logical and proper:

CONCLUSIONS AS TO BLOOD.

1. There is an absolute lowering of the freezing point of blood in pneumonia.
2. The freezing point lowering of the blood depends in some way either on the extent of consolidation of the lung or on the height of the temperature, or both.
3. The lowering of the freezing point of the blood is greater than would be accounted for by the increased venosity of the blood, due to deficient aëration in the lungs.
4. The concentration of the blood increases, as shown by the lowered freezing point, as the disease progresses up to the time of crisis. Some time is necessary for the elimination of the excessive accumulation of products in the blood. Hence, several days elapse before the freezing point of the blood rises again to normal.
5. In those cases where the heart weakens perceptibly, the freezing point of the blood becomes lower. In the fatal cases in which the heart gives out, the freezing point of the blood is extremely low.
6. The lowered freezing point of the blood is apparently not due to deficient kidney function, but may be due to the inability of the kidney to excrete the excessive products of metabolism.

CONCLUSIONS AS TO URINE.

1. The freezing point of urine in pneumonia is considerably lowered.
2. This lowering is greater than would be accounted for by a mere concentration of normal urine.
3. The chlorids excreted are constantly diminished, due to a decrease in amount taken in (Sollmann).
4. The freezing point of the urine times the number of cubic centimeters voided is increased.
5. The quantity of urine is decreased, whereas the freezing point is lower.
6. The lowering of the freezing point of the urine is not due to chlorids, but to metabolic molecules excreted.
7. The freezing point of the urine does not rise to normal until after that of the blood, that is, several days after the crisis.
8. The specific gravity of the urine is not an accurate index to the concentration of the urine.
9. The freezing point of the urine bears no constant relation to that of the blood normally, for in a case with a freezing point of blood at —0.54° C. the freezing point of the urine may normally be lower than in a case in which the freezing point of the blood is —0.57° C. or *vice versa*.

I wish here to express my thanks and gratitude to Prof. F. R. Zeit for suggesting this problem and directing the work; to Dr. W. H. Buhlig for many valuable suggestions, and to the directors of the laboratory and internes of the Cook County Hospital for assisting me to find the material.

PLEURAL EFFUSIONS IN CHILDREN.*

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These affections are probably as old as the creation of man, as the conditions producing them must have obtained ever since man first became sick. Hence, I scarcely think that much that is new can be said on the subject; it is possible, however, that I may say something that will cause some one to search deeper than ever before, and thus enable him to save a life that otherwise would have been sacrificed. But the best motive I have in writing is to provoke some discussion that may throw more light on diagnosis or treatment that may prove of benefit to the practitioner and to the one mostly concerned, the patient.

These pleural effusions, though fairly easily diagnosed by the expert, are too frequently overlooked by the rank and file of the profession, and, secondly, often when diagnosed, are not treated with sufficient vigor, but allowed to drift on expectantly, when only radical measures should be employed and thus give the patient the best chance and the most certain promise of recovery. It may seem strange to some of you whose daily life in large cities is so full of scientific certainty that I should make such observations unless you come in contact, more than I am aware, with that large number of routine physicians who are willing to bear or, rather, let their patients bear what they, either through ignorance or shiftlessness, are not able or willing to take the trouble to help. But some of you are, as I have been, a teacher, and you certainly remember some of the material that came before you as students and who graduated in medicine from your classes, I am sure, with many misgivings on your part. The power to generalize, and from that foundation to specialize, is not given all people; the ability to intelligently make comparisons, as we do in diagnosis, is not easy alike to all, even when they have a large stock of facts on hand. Hence, I want to emphasize this fact that throughout this great country of ours many patients with pleural effusions, both old and young, especially the latter, go to their deaths with the disease unrecognized by the attendant. You know, if these are not properly treated, and it must be surgically, that the vast majority will prove fatal.

First, there is a widespread idea that all pleural effusions must arise from a preceding attack of pleurisy. A little reading in pathology and text-books on diseases and their etiology would soon remind us such is not the case. Most cases in children, perhaps nine-tenths of them, have their origin in pneumonia—especially that form termed pleuropneumonia—yet many cases of effusion are secondary to Bright's disease, scaret fever, rheumatism, amyloid disease, trauma, heart affections, typhoid fever, syphilis, affection of the spleen, articular inflammations, pertussis, osteomyelitis, appendicitis and others, not the least of which is tuberculois. For reasons not supported by experience, it has een the routine of fashion to consider nearly all cases f pleural effusions of tuberculous origin, and, while it is not good practice to ignore tuberculosis as a factor in the etiology, yet there is no good reason to overemphasize it. There are many more of these tuberculous in adults than in children, in the ratio of 4 to 8 mes as many. This is as it should be, as we find many more cases of tuberculosis in adults than we do in children, especially in early childhood. It is most asonable to think of the reverse, namely, that conmptives may be liable to pleural effusions as well as her people.

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* Read in the Section on Diseases of Children of the American Medical Association, at the Fifty-sixth Annual Session, July, 1905.

There are many other errors not only in etiology and anatomy, but in the pathology, prognosis and treatment of these cases. For instance, we speak of the pleural cavity. Physiologically and anatomically it may be said there is no such cavity. Only when filled with pathologic products do we have such a cavity—when filled with serum, pus, chyle, blood or air. Then the layers of the pleura normally contiguous become separated and a cavity forms, filled with these products. These fluids usually first make their appearance in the costophrenic sinus, then extend laterally and upward. When pleural exudates are examined we find many pathologic micro-organisms in them, often defining the character of the origin of infection. Staphylococci, streptococci, pneumococci, tubercle bacilli, gonococci and others. I am firmly convinced that the presence of any of the pathologic micro-organisms in sufficient numbers may provoke enough irritation to produce a pleurisy with an accompanying effusion.

As far as anatomy of the parts involved is concerned, it will not be necessary to go into detail, for text-books on anatomy and diseases of children will furnish that information more fully than I can, but will only draw your attention to the fact that the anatomy of the respiratory apparatus differs from that of the adult in that the pleural sinuses are deeper in children; hence, in puncturing an effusion it may be well not to wound the diaphragm, which rises comparatively high in the child. Even the stomach or intestines might be wounded if one should forget these relations. The relations of the two sides must be kept in mind. The pleural sinus of the left side is deeper than on the right, owing, perhaps, to size and position of organs on right side. The liver, especially large in the child, pushes the right lung up. The right lung is also smaller or shorter than the left lung. So when aspirating it is well to use the posterior axillary line, as that would lead to the most central point of all effusions—and to use the sixth or seventh interspace on the left side and the fifth or fourth on the right side, of course, combining these anatomic relations with each individual case.

As diagnosis in some cases is difficult, all the more should we use care in not allowing a case to escape us undiagnosed. Ordinary percussion and auscultation carefully made, excluding pulmonary and respiratory affections, and when in doubt coupled with the use of an exploratory aspiration, will, in painstaking hands, usually lead to a correct diagnosis. Pleural sounds, especially in dry pleurisy and serofibrinous pleurisy, by auscultation, imitate the creaking of a compressed snow ball or fine creaking sole leather. The breathing is of the bronchial variety. Percussion yields dullness, but in some cases when the child lies down the effusion may settle to the lowest point and, surmounted by gas or viscera, may give resonance and thus deceive. Diagnostic signs in effusions are rather deceiving, because both percussion and auscultation sounds vary owing to position of the child and number of places of adhesions. Percussion usually reveals flatness; absence of râles, friction sounds and bronchial breathing are found on auscultation. We also notice cough, pain, diminished fremitus, intercostal bulging of affected side, intense dyspnea, paleness and anemia, decubitus on diseased side by preference, and when all these signs do not give a satisfactory diagnosis they may be supplemented, as before mentioned, by exploratory aspirations; even then the latter procedure in careless hands may prove unsatisfactory and appear negative when effusion is present. The needle may be too small and may become occluded with coagula, the precise position of the effusion may not be reached by not going far enough or too far, being placed too high or too low; the aspirating apparatus may be faulty; in short, when effusion is strongly suspected and exploration is at first negative many patient and careful trials should be instituted before failure is to be accepted. It is scarcely necessary to add that all such efforts must be carried out only under most pedantic care as to asepsis, and the old surgical maxim, "*Nil nocere*," is here paramount.

The character of the effusion can by no means be diagnosed except by the exploratory method. It may be grossly stated as a matter of presumption that in children of 3 and under, the effusion is purulent. The difficulty of diagnosis is increased when an effusion is encapsulated, when it is a subphrenic abscess or when it is an empyema necessitatis, as the latter may be mistaken for superficial abscess, eroded or gangrenous rib or trauma or the outlet of some burrowing abscess, as, for instance, a perinephric or psoas abscess. But in cases of pleuropneumonia the effusion may be masked by the prominent symptomatology of the pneumonia, but this alone should put the attendant on his guard, especially if he have a case of retarded resolution, for an empyema may be mistaken for a case of delayed recovery in pneumonia. Many cases of empyema are often very insidious in onset and behavior, but if you will remember the proneness of children to develop effusion after respiratory diseases, after scarlatina, tuberculosis, pertussis, rheumatism, endocarditis, liver diseases, kidney affections and those of the spleen, especially when coupled with an increased leucocytosis, it is better to suspect empyema and act accordingly. Now, I do not imply that one should go to extremes and diagnose everything as effusions simply because we can not make it out a case of malaria or fits, but let us use caution and not be humiliated and fail in our diagnosis and lose a valuable, promising life that should by all means have been saved, for, while most undiagnosed cases will die *per contra*, nearly all properly treated cases recover in children, and that is my other chief contention in this paper, to which I will refer under treatment.

I wish to emphasize prognosis. This, especially in children, is good, but must materially depend on the treatment, the skill of the attendant and especially the faithfulness with which a positive line of treatment is carried out. It also depends much on the primary disease that gave rise to the effusion and the length of time the patient has been afflicted. It is most unfavorable when the diagnosis has been delayed, where too much stress is placed on expectancy or, what amounts to about the same, medical treatment, when primary disease has seriously invaded or destroyed some of the principal organs, such as the kidney, lung, heart, endocardium or pericardium, in amyloid degeneration of the liver, also when operation is delayed too long. Prognosis is good when early diagnosis is made, when operated on early by proper method, when child's general condition is good, and causative disease has not made too serious inroads on the patient's constitution. But, to repeat, in general it may be stated the prognosis is better than in adults in proportion of two to three times as good. Of course, under 1 year of age the mortality is great, probably 50 per cent. of deaths; however, at that age the disease is rare. Also when the disease is bilateral, a rare condition. Some of my chief reasons for a better prognosis in children is that we have a more active metabolism, a smaller cavity, where in this case real, and not relative size, counts—a greater elasticity of chest wall so the cavity can more readily contract or collapse, a condition much to be desired. It may be well to pause here long enough to remind you that fully nine-tenths of all cases usually follow pneumonia, especially pleuropneumonia; the other one-tenth all the other causes previously mentioned.

I have already said enough to have committed myself to the treatment; that it must in the majority of cases be surgical. From the fact that over one-third of all cases of effusion are purulent, the treatment must be surgical; most of the others are serofibrinous and, while they often absorb under stimulation, poultices, heat and liniments and some other medical treatment, yet they would recover faster under incision, because the large fibrinous clots so frequently present can be mechanically removed instead of leaving them to tardy absorption and a possible prey to infection. The two chief surgical procedures are puncture and aspiration and incision with or without section of a rib or two. True enough, aspiration has cured some cases of effusion, both serous and purulent, yet why trust a doubtful method for one more certain? When we have a purely serous effusion, aspiration once performed, or once or twice repeated, will usually lead to a rapid recovery. The same is true when an incision is done for an empyema. It may be parenthetically stated that while children recover rapidly they also die very rapidly under operation if they succumb to it; so danger signals must be heeded. Aspiration may fail in such cases or it may delay the recovery; it may prolong the infection and thus endanger the recovery, and may also lay the foundation to a possible tuberculosis. As to accidents in operations, they are less liable than in adults.

Now, who should perform these operations? I claim that any physician who is competent to treat diseases at all should be able to aspirate a serous effusion or make an incision for an empyema in a child. Of course, it is self-evident that if a competent surgeon can be had it may be preferable to have him operate. In rare cases, and they are extremely rare, where an Estlænder operation is required or the more serious and extensive Schede procedure, the highest possible surgical skill is none too good.

I shall not worry you as to surgical methods, how to operate, the best methods of drainage and the other details; any modern text-book will supply this information if, indeed, any one is now present that may be in need of such. With a short report of two cases I will conclude.

Case 1.—Girl, 3½ years old, had pneumonia, following measles; was supposed to be suffering from delayed resolution. I was called in consultation about the thirtieth day of disease; found child of naturally fleshy and buxom habit, very emaciated, pale, cadaverous appearance, increased leucocytosis, hectic cough, great dyspnea, left intercostal spaces bulging, heart displaced to right, and other symptoms classical. On inspection found just above left nipple in fourth interspace a red spot ⅝ inch in diameter, appearing like a common boil; I diagnosed an empyema necessitatis, proved by aspiration. I made an incision two inches long, beginning with the external lesion and extending toward the left. Fully 40 ounces of pus of a rich, creamy appearance was removed under cocain anesthesia, double rubber drain introduced and child made a complete, uneventful recovery. This fine little girl would have died under her first attendant, who still treated her for pneumonia and grippe in a very dilatory manner, not even administering supportive measures.

Case 2.—Boy, 31 months old, had some respiratory disease diagnosed by his attendant as pleuro-pneumonia. On the thirty-first day of the disease the physician, a bright country practitioner, observed bulging on left side, heart displacement and other signs which he interpreted either pleural or cardiac effusion, not being certain which, and exploratory aspiration being denied him, he sent for me. Under cocain exploration was painlessly made, pus found at once and operation advised, which was done next day. This child was very thin, restless, cyanosed, pulse high, temperature 104.6, anxious expression of face and, as in other case, leucocytosis marked. Incision under local anesthesia was made in sixth interspace and between anterior and posterior axillary lines two and a half inches long. With each respiratory movement pus spurted out in streams. Child was held by father on lap, left arm raised high and placed around father's neck. After liberating about 50 ounces of pus patient got weak, I desisted further work, placed a double drain, dressed wound, bandaged and put child to bed. He also made a brilliant recovery, notwithstanding large quantities of pus were removed many times at subsequent dressings.

Both these children are now (one 4 years and the other 3 years since operation) in splendid health, whereas both would have helplessly perished without operation timely performed. True, cases of empyema necessitatis have spontaneously recovered, so have cases that ruptured into a bronchus, and pus expectorated, but it would be only proper to say of such that they got well in spite of poor treatment rather than that the attendant deserved any credit for their recovery.

In closing let me once more urge a thorough diagnosis in a painstaking, almost pedantic manner, with all clothing removed as well as bedding, leaving no means unused to confirm your findings. You may not believe me, but experience confirms me, too many auscultations are made with the unaided ear, too many percussions made through their clothes and poultices, and too many diagnoses arrived at by snap judgment processes and smart guesses.

It may not be amiss to remember that the microscope and blood counts may aid when we are in the dark, and that children having effusions usually die if badly treated, and almost always recover when treated correctly, fearlessly and courageously.

DISCUSSION.

Dr. A. C. Cotton, Chicago, agrees with Holt that the apex beat should be located if possible in every case of suspected empyema, even when the needle shows pus. Left-sided effusion, if extensive, ought to displace the apex beat. Otherwise the source of pus may be a pulmonary abscess. Dr. Cotton does not believe that Dr. Wahrer intended to convey the impression that he lost 50 per cent. of his cases. Some people's ears are built pretty well, and we have the authority of the Scriptures to let him who has ears to hear with his ears and not use the stethoscope.

DR. WILLIAM J. BUTLER, Chicago, is inclined to regard with great skepticism any diagnosis of effusion necessitating surgical interference when the dullness is obscured by slight change of the position of the patient.

DR. D. S. HARNSON, Cleveland, Ohio, believes that the diagnosis of pleural effusion can be made without the needle. Were he the child he should like that physician best who would make a careful examination and make the diagnosis without the needle because, simple as it is, it is both painful and unpleasant. A child with pleural effusion will nearly always lie on the back, and the man who carefully examines the back will nearly always make out these exudations very early.

DR. C. F. WAHRER stated that some of these patients go unrelieved and to their graves for want of proper diagnosis and treatment. In reply to Dr. Cotton's statement that 50 per cent. of cases is too great a mortality, he said that in children one year of age the mortality is great, and that the consensus of opinion of authors in this country and in Europe is that in about 50 per cent. of children under one year the mortality reaches 50 per cent. and over. The different sounds in auscultation and percussion vary as much as the number of authors speaking on them. Dr. Wahrer does not care about putting his ear on everybody's naked chest, and in some patients the intercostal space is so deep that his ear is not deep enough to place it in between. Those who depend on the unaided ear have not availed themselves of the best opportunities of making a diagnosis by the use of the stethoscope. In reference to Dr. Harnson's statement that he would prefer to have a diagnosis made without the needle, Dr. Wahrer said that there is no harm in inserting the needle into the chest if hands and instruments are pedantically clean. It is better to avail ourselves of all the diagnostic means rather than to let pity interfere with our best judgment.

THE MANAGEMENT OF TYPHOID FEVER IN CHILDREN.

A PLEA FOR ENTEROCLYSIS.*

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In attempting to give a very brief outline of my methods of managing typhoid fever in children, it is well to preface my remarks by saying that I will confine myself strictly to those methods which my experience has found most satisfactory; it is hoped that by so doing I may invite a free discussion and thus gain some additional knowledge on this perennial subject.

To manage a case of typhoid fever in a child successfully, we must be sure of our diagnosis and fully understand the child. An early diagnosis is not an easy matter, because the disease is frequently ushered in under the guise of some acute disorder which greatly postpones a decision. Usually the child has been ill for six or seven days before the physician is called. At this time we may find a temperature ranging from 101 to 104 degrees. The symptoms may strongly suggest enteritis, meningitis, pneumonia or autointoxication. Indeed, it may be doubted whether we ever manage a case of typhoid as typhoid before the end of the first week. Generally at this period we will arrive at a correct diagnosis, and then only by the process of exclusion.

Typhoid in children may be accompanied by diarrhea or constipation; the latter seems to be as frequent as the former. The spleen is often chronically enlarged, especially in children with rickets. This is a strong factor, however, in the diagnosis. The same is true of the liver. Chronic appendicitis comes in for its share of the blurring of an early diagnosis in typhoid. The general symptoms very frequently do not agree with the temperature, pulse or the physiognomy of the patient. In no other serious disease do we have the patient seemingly so well, in spite of some single, serious symptom. By reason of this conflicting array of early symptoms we frequently encourage relapses.

The Widal test and the diazo reaction are of very little value prior to the beginning of the second week, at this time we have additional symptoms to confirm the diagnosis, thus reducing the value of the Widal test. Undoubtedly most cases of chronic fever in children are diagnosticated by the process of elimination, and not usually before the tenth day, the only exception being where we have an overwhelming toxemia with few complications. Many cases of typhoid fever brought under my notice had been previously treated for pneumonia, and many cases were classified as typhoid which were chronic food poisoning.

Regardless of our pathology, for the sake of clinical study, typhoid may be regarded as a general sepsis, and any treatment that will lessen the toxemia and shorten the leakage in the general circulation may be regarded as a step toward a specific treatment. As yet, however, we have no specific treatment for typhoid fever. It is very interesting to notice, in passing, how frequently specific medication gains recognition for a time, its limitations conceded, and then it is discarded and quickly forgotten. The same may be said of the Brandt system, while tepid bathing has universal application.

It has been my privilege to see a large number of very severe cases of typhoid fever in children ranging between the ages of 6 and 15 years, the most susceptible age as well as the age when tact and care are at a premium.

To me it seems that the two elements necessary to success in combating this troublesome and dangerous disease are to reduce the toxemia and supply food and fluid. The first step is quietude in a large, well-ventilated room with calomel, which has not lost its reputation as an intestinal antiseptic, and a daily colon irrigation. The emphasis of the whole treatment I wish to place on the manipulation of the colon washing; this I order daily unless some grave counter indication obtrudes itself. Enteroclysis will reduce toxemia and necessarily the temperature, and at the same time supplies much needed fluid to the body. If this is carefully performed, it will be acceptable to the child and greatly shorten the period of illness. The temperature of the colon irrigation is always governed by the temperature of the child's body. All text-books give the technic of enteroclysis, yet I fear that the nurses fail to gain the desired results from this mode of treatment, because the attending physician does not impart specific instructions. Frequently I assist the nurse in the first treatment, thus allowing me to discover any abnormalities of the bowel, if any should exist, as I recognize its limitations as a therapeutic agent, and this must be done before valuable time is lost or any mischief occurs. If nurse and physician have gained the confidence of their little patient, the work will be performed pleasantly and profitably.

It must be remembered that the intestinal tract is the seat of many troubles and dangers during a course of fever. Tympanites may be troublesome by reason of some previous enteritis or peritoneal irritation; this is usually combated by colon to relieve this tympany. I frequently substitute bicarbonate of soda for the saline solution, or I may add tincture of asafetida or some aromatic infusion, such as chamomile or a small quantity of turpentine, if tympanites and pain are troublesome. If peristalsis is increased by the intestinal washing, I reduce their frequency; or, if necessary, throw into the bowel one or two ounces of starch or bismuth emulsion. If hemorrhage should occur, I use the cold enema and apply the ice externally in serious hemorrhage; ice suppository may be indicated as well as the ice bag externally. If the heart is weak, I use a small quantity of whisky in the clyster.

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* Read in the Section on Diseases of Children of the American Medical Association, at the Fifty-sixth Annual Session, July, 1905.

I depend on the ice bag to the head and the hot water bag to the feet, as a routine, with a tepid sponge night and morning. Ice bag to heart, if fever is high. Throughout the illness observe a careful toilet of the nose and mouth. Change of position every two hours will serve to prevent pneumonia. Ice bag to the head need not be watched, except to see that it is not empty, but ice bag to the chest or back should not remain too long on one spot for fear of producing congestion of the kidney. I have found that children will submit more gracefully to the enteroclysis and the use of the ice and hot water bags than to frequent bathing, and on this account I have practically abandoned sponging every two hours if temperature reaches 102.2 degrees, which seems to be the classical treatment.

Diet, throughout the whole course of the fever, I have reduced to peptonized milk and albumin water. Whole milk is out of the question, even with children 15 years of age. As Jacobi says, "It is food for children in health, but food for bacteria in fever."

Even peptonized milk is better appropriated if taken with some charged water. I alternate the milk with the albumin water; the use of lemon and orange water is of inestimable value. If any drug is indicated—and I never give any except to meet a decided want—I administer it in a large glass of water. Last year I compared six cases with and without the free exhibition of water. In the six cases in which I forced a full glass of water with frequent intervals, the temperature reached the normal on an average two days earlier than in the series of patients who were allowed to drink the minimum quantity, thus demonstrating the value of fluid as an eliminator.

Retention in a recumbent position and on liquid diet I have found should continue for ten days after normal temperature has been reached.

In conclusion, let me say that I have no original thought to advance, but simply desire to emphasize the value of enteroclysis in typhoid and to insist on a careful technic of the same by the attending physician. Success in surgery is attained by thorough technic in the respective fields, and if we as physicians are to gain any exactness in our treatment we must carefully eliminate the unnecessary routine and centralize and magnify those means which we have found essential and necessary.

DISCUSSION.

Dr. John C. Cook, Chicago, emphasized the value of water in the treatment of typhoid fever. The value of washing out the toxins is unquestioned, and the water treatment in general has been proved to be valuable. When antitoxin was first introduced and was gaining ground, Baginsky was asked if it were advisable to use it in all cases. His answer was to use a remedy when it was fashionable, that it cured them. There is probably nothing that has marked the different periods of the medical era as much as our views on therapy. Everyone who has used enteroclysis as a routine treatment has undoubtedly found it valuable. In Dr. Hollopeter's experience in hopitals his nurses are trained, but in private practice where nurses are not at hand the details of this treatment should be gone into. Enteroclysis is a valuable remedy, as is calomel, but the best results will not be obtained from it unless detailed directions are given for its employment. The ice bag Dr. Cook considers a valuable remedy, but in private practice the physician can not tell those in attendance to leave the bag on the head indefinitely without some reference to the temperature.

Dr. Kate Lindsay, Boulder, Colo., said that the ice bag can be used very well in private practice if the physician applies warm fomentations for three to five minutes after the ice bag has been on for an hour or two and then gives a brisk rubbing. The ice bag can then be reapplied. This will quiet the nervous system and makes the treatment pleasant to the child. The ice bag can be applied safely by those who are very inexperienced if the details are attended to and the circulation kept up. A pleasant effect will be gained by the intermittent use of short, warm applications, and the effect of the ice bag can be prolonged by this combination of heat and cold.

Dr. A. C. Cotton, Chicago, thinks that physicians are too apt to trust details to the nurse. Many nurses supposed to have been thoroughly trained fail to recognize all the anatomic requirements. When a nurse introduces a thermometer or the nozzle of an irrigator into the rectum with the baby in the dorsal position, she is taking the chances of causing traumatism of the posterior wall of the rectum. The probabilities are that the nurse will have the child lying on its back. In irrigation of the rectum there are many opportunities for traumatizing the mucosa. Of course, the physician knows that the axis of the rectal outlet forms an angle of 40 degrees with the long axis of the body, and that no rigid instrument can be introduced into the rectum from the front with a patient in the dorsal position without forming a right angle with the posterior wall of the rectum. It is easy, therefore, to see how rectal ulcers may develop. Dr. Cotton believes in this care of the child in typhoid fever especially; since frequent invasion of the rectum may have to be kept up for perhaps three weeks, it is an essential point that the nurse be instructed to turn the child over on the side, introducing the tube at an angle of 40 degrees.

Dr. John Lovett Morse, Boston, said that in judging of the results of the treatment of typhoid fever in children it must always be remembered that the tendency of this disease in childhood is to recovery. He cautioned against forming too favorable an opinion of the results of treatment by large amounts of water internally. He does not think that the published results from this form of treatment will bear close investigation and feels sure that when others begin to try the treatment they will not obtain the same results. It should be remembered that in typhoid the vasomotor system is relaxed and that on this account care must be observed in putting large amounts of water into the relaxed vessels, and thus dilating them more and bringing further strain on the heart. In a recent case of scarlet fever treated in this way, so much water was given that dilatation of the stomach resulted, and several months were required for the recovery of the patient. Dr. Morse does not believe it is necessary to keep patients with typhoid fever on so restricted a diet as is usually done. He feels that a diet composed entirely of milk is not the best food. There is no food, in any way reasonable, which will give such a large residue as milk. A caloric value much greater than from milk can be obtained by giving diluted cream. Better than proteids and albuminoids in the diet is some form of starch sugar.

Dr. W. C. Hollopeter said that Dr. Cotton's statement relative to the danger of injury to the bowel seemed rather misleading. Dr. Hollopeter allows the tube to be inserted just beyond the external sphincter when the water is turned on; by this method the water forms a cushion which slowly dilates the bowel, and the tube following causes no injury. It would be a rude method indeed to push the tube into the bowel without first distending it. He emphasizes this point because nurses are prone to employ this valuable therapeutic measure in a slovenly manner. Dr. Hollopeter referred to Dr. Lindsay's remark about the warm application, and said that he believes we can reduce temperature as well with warm water as with cold. He never uses cold unless there is a very high temperature. In answer to a question, he said that before a physician gets a patient with typhoid fever he has his mind made up to use enteroclysis.

THE EXTRACTION OF UNCOMPLICATED IMMATURE SENILE CATARACT.[*]

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In a discussion of this subject it is appropriate to say that a cataract is designated as senile if the patient has reached the fiftieth year of age; uncomplicated, when not associated with any special disease; and immature, when the opacity does not extend throughout the entire lens substance.

While this designation is in accord with the generally accepted teaching of to-day, technically we probably are not warranted in associating cataract with senility in the sense that the opacity of the lens occurring after middle life is a symptom of senility; or in designating a cataract as uncomplicated simply because we fail to detect the co-existence of any other intraocular pathologic condition.

Numerous observers have asserted that there are good grounds for considering eyes in which cataract develops as otherwise diseased. Thus Becker[1] states that, strictly speaking, there is no such thing as a primary cataract, the expression "primary" simply hiding our ignorance. Foerster[2] evidently recognized the influence of a previous or general disease when he said, "If a cloudiness of the lens is just beginning, very severe bodily ailment may hasten the development of cloudiness," to which Stricker[3] adds, "The constitutional disease manifests itself in its action on the lens in such a manner that it either first causes disease of other portions of the eye, thereby leading to a pathologic changed vitreous, which, in its turn, leads to a disease of the lens and cataract formation, or the lymph of the entire organism becomes changed, thus leading to cataract formation without any other disease of the eye having previously existed." Risley,[4] in calling attention to the importance of choroidal disease as a factor in the production of opacity of the crystalline lens, makes the statement that "while opacity of the lens is a disease of advanced life, it does not in all probability depend on senile change, but is originated in local pathologic states involving the nutrition of the eye itself." It is probable, however, that functional decline of the tissues of the body, which mark the onset of senility, may, by lowering the resisting power of the tissues of the eye, be responsible for the development of pathologic conditions which disturb the normal sclerosing process in the lens and lead to opacity. We may have premature, as well as delayed senility, but that does not account for the cataracts which occur in persons just past middle age who may be prematurely in decline, nor does it explain why persons of great age in whom the signs of senility are exceptionally pronounced, and who have remarkably good vision, are exempt from cataractous change of the lens. It is reasonable to presume, therefore, that cataractous change in the lens is either secondary to some disease, either local in the eye, or to some general disease of the entire organism, and that senility may or may not be a factor in the production of the pathologic state on which the development of the cataract depends.

The existence of marked choroidal and vitreous changes accompanying incipient cataract we are all familiar with, as such cases are frequently presented to us before decided clouding of the lens makes a satisfactory ophthalmoscopic view of the fundus impossible, and at a time when the vision is more impaired by the choroidal and vitreous changes than by the loss of transparency in the lens. But there is a class of cases in which a mild choroidal inflammation precedes the development of cataractous change in the lens, which may be undiagnosed unless the ophthalmoscopic examination is made early in the progress of the case, which frequently is not possible because the opportunity for such examination is not offered, or may be overlooked later, when the patient presents himself on account of failing vision from incipient cataract, unless the history of the case is carefully considered and unusual care is exercised in making the ophthalmoscopic examination with a fully dilated pupil. The fact that we do not find diseases of the eye ground after the extraction of the cataract does not indicate that such diseases did not exist in mild form at the beginning of the cataractous process, and subsequently disappeared as a result of the enforced rest of the eye occasioned by the clouded lens. From the fact that I have been able to detect these mild pathologic changes in the fundus frequently during the stage of incipiency of cataract, I am inclined to believe, as Risley has pointed out, that diseases of the eye ground are the rule rather than the exception in cataract patients.

With a recognition of the diseased processes which constitute the principal factor in the causation of cataract we may hope, by applying the proper treatment at the proper time, to prevent the occurrence of cataract in a fairly large percentage of persons who present themselves to the ophthalmologist before cataractous change in the lens has set in, or at a time when the beginning cloudiness of the lens is so slight as to make its arrest entirely possible. In those cases in which the process of cataract formation has become well established I do not believe it is possible to cause a retrogression, and it is those cases, when unaccompanied by diseased processes which would contraindicate operative procedures, with which this paper deals.

But the very fact that many, and perhaps the majority, of immature cataracts are accompanied by at least a mild disturbance in the uveal tract is sufficient ground for hesitation in attempting extraction, even in the absence of other contraindications, for the reason that enforced rest occasioned by the increasing opacity of the lens is a measure required to produce a subsidence of the uveal disturbance, and the beneficial effects of which would be more or less destroyed by extraction of the protecting lens. As the existence of those mild vitreous and choroidal inflammatory or degenerative changes must necessarily alter the prognosis in extraction of immature cataract, it is of the utmost importance that the history of such cases be given careful consideration and the functional examination of the eye be carried out with utmost care. In many cases, again to quote Risley,[5] to whom we are indebted for extensive study of this subject, a long history of asthenopia, preceding the failure of vision from incipient and immature cataract, a more or less discolored iris, sluggish in its action to light and shade, and to mydriatics, injected conjunctiva and swollen caruncles, associated with headache, furnish a group of symptoms which point to the existence of choroidal disease." These processes do not, in a large proportion of cases, present the gross ophthalmoscopic appearances which characterize the rapidly destructive diseases in which marked retino-choroidal inflammation, fluid and muddy vitreous, and floating opacities are conspicuous features, but they are attended by a characteristic group of objective symptoms which, if not demanding treatment, certainly demand the enforced rest secured by the gradual opacification of the lens. But in those slowly progressing cases in which the clouded lenses, even though semi-transparent, have practically incapacitated the individual for the ordinary pursuits of life, and in which the enforced rest of the eye ground for a greater or less period has resulted in quieting the objective symptoms present with the beginning of the cataractous process, the advisability of extraction becomes a question worthy of attention.

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[*] Read in the Section on Ophthalmology of the American Medical Association, at the Fifty-sixth Annual Session, July, 1905.

[1] Pathologie und Therapie des Linsen Systems, 1877.

[2] Graefe-Samisch, vii.

[3] The Crystalline Lens System, 1899.

[4] University Medical Magazine, March, 1889.

[5] The Journal A. M. A., Dec. 7, 1901.

In considering the operative features of these cases of cloudiness of the lens in those persons beyond middle age it is essential that we differentiate the immature cataract from the loss of transparency, accompanied by impairment of vision, due to advanced sclerosis. The one is a diseased process, due to an interference with the normal sclerosing process and accompanying alteration in the transparency of the lens (Becker), whereas the other is purely a physiologic process due to a lessening of the transparency on account of the hardening of the lens and consequent greater absorption of light. In the immature cataract, particularly those occurring in persons under 50 years of age, there will generally be found a soft cortex, adding to the difficulties of extraction, whereas in the sclerosed lens the cortex will be found hard, thus making it possible to extract the lens in its entirety.

Until recent years it was the generally accepted teaching that immature cataracts were not favorable for extraction, owing to the difficulties encountered in the removal of soft cortical material, and in consequence nearly all operators followed the practice of waiting until maturity, or until the lens was entirely opaque, before attempting extraction. That policy is still followed by many experienced and competent operators, though not a few attempt, and with a considerable degree of success, to hasten the time when extraction may be performed by practicing artificial ripening of the cataract by one method or another.

Schweigger,[6] in a paper published in 1890, was one of the first to advocate the extraction of unripe cataracts, and has asserted that he does not believe that it is necessary to cause an artificial ripening after the time when physiologic changes in the lens have done away with the act of accommodation; that is, toward the fifties and surely after the sixtieth year. He operates "all patients past the fiftieth year as soon as the senile cataract interferes greatly with the patient's vision, so that life ceases to be a pleasure to him, and he becomes unable to be self-sustaining, and the doctor may hope that by removal of the lens vision may be materially improved. It is immaterial whether a greater or less portion of the lens is still clear." This teaching of Schweigger, while not generally accepted and followed, has had the tendency to give many operators confidence in their ability to secure satisfactory results from the extraction of unripe cataracts, and as a result the practice is growing more and more in favor, with its attending benefits to that large class of unfortunate persons suffering from immature cataracts who otherwise would be compelled to go without useful vision for months and perhaps years while waiting for the cataract to become "ripe," and thus best suited to extraction. (Since writing this paper, Professor Hirschberg informs me that he advocated, prior to the publication of Schweigger's paper, the extraction of immature cataract, and his views on this subject, expressed before the Berlin Medical Society, were published prior to the appearance of Schweigger's paper in 1890.)

The principal objection to the extraction of immature cataract has been that, in the attempt to remove a lens not entirely opaque, more or less of the cortex remains which adheres to the capsule and is difficult, if not impossible, to remove without subjecting the eye to trauma which later gives rise to inflammatory reaction and jeopardizes the function of the eye, and if allowed to remain will either produce secondary cataract, with attending impairment of vision, or inflammatory reaction, with danger of damage to the function of the eye, or both.

Concerning the age at which the lens is sufficiently sclerosed to permit of its complete removal from the capsule, Schweigger[6] makes the following statement: "At sixty years of age the lens is hardened in its entirety, whether cataractous or not, and whether the cataract is complete or not. The cataract and the induration are phenomena absolutely different; the one is pathologic, the other physiologic. Thus, in persons of 60 years who have lost the faculty of accommodation, a cataract even incompletely developed may be removed without the opacities being reproduced, for it is certain that the lens can be removed entirely." To this statement I think we may take exceptions. Under the fiftieth year, or while there is still some accommodation present, the cortex of the lens still consists of a tenacious sticky mass, but I have frequently observed a soft tenacious cortex after the sixtieth year, and occasionally after the seventieth year, in lenses that were the seat of immature cataractous formation. While sclerosis may have progressed to that point where in some cases at sixty years, as Schweigger says, the lens may be easily extracted in its entirety, whether cataractous or not, generally speaking we are not warranted in assuming such a conclusion for every case, and the extraction of any unripe cataract carries with it the possibility of having to contend with soft cortical substance, with the chances of a lessened amount or none with increasing age of the patient.

With a reasonable certainty that an unripe cataract, except in a person of advanced age, is accompanied by more or less soft cortex, the advisability of attempting extraction becomes a question for serious consideration. In making a decision several factors must be taken into consideration. First, what is the state of vision in the fellow eye; second, how rapidly is the cataract progressing; third, how seriously inconvenienced will the patient be if he waits for maturity; and, fourth, what contraindications are there to the extraction of the cataract, even though immature.

Those ophthalmologists who possess an unduly ambitious desire to operate on the slightest provocation, and who favor extraction of immature cataract, may advise operation, no matter if the fellow eye has approximately perfect vision; but such advice is not good and should not be accepted. No extraction of an unripe cataract is warranted when the fellow eye has vision sufficient for the patient's needs, unless the first discernible signs of beginning cataract in the fellow eye warrants the belief that the increasing opacity will soon seriously interfere with vision and it is thought that extraction of the more pronounced cataractous lens will restore good sight before the failing vision in the fellow eye has had time to reach a stage where it will seriously inconvenience the patient. Even in such instances the needs of the patient, so far as earning a living is concerned, the general physical condition, the state of the eye as concerns irritation or swollen lens, and the progress of the opacity must all be taken into account before arriving at a final decision to operate. Particularly contraindicated is the extraction of a lens swollen by imbibition, attended with shallow anterior chamber and sluggish pupil from an irritated iris; for here, in addition to the difficulties of making a proper corneal section, must be considered the probability of the existence of a quantity of particularly tenacious soft cortical substance, the manipulations for the removal of which are almost sure to set up an inflammation of more or less severe character in the already irritated iris; and, furthermore, the swelling of the lens is an indication of rapid progress of maturity which it is unquestionably advisable to await in such case.

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[6] Extraction of Unripe Cataract, Berliner med. Gesselschaft, 1890. Hirschberg's Centralblatt.

With immature cataracts in both eyes, the advisability of operation depends on the rapidity of progress of the more advanced cataract, and the amount of inconvenience to which the patient will be subjected if maturity of the cataract is awaited. At times the ripening process proceeds very slowly, while in other instances it is rapid. The history of the case, giving approximate date of onset of failing vision, will in many cases serve to indicate the rapidity of progression, though in most instances it is advisable for the ophthalmic surgeon to determine the progress of opacification by repeated examinations during a period of from one to four months. If it is determined that the process of opacification is progressing rapidly, it certainly is advisable to await maturity of the cataract before attempting extraction, for it must be admitted that, all things considered, the chances for an easy and complete removal of the lens in its entirety, with a minimum amount of trauma and attainment of the best possible vision, are better if the cataract is mature.

In the rapidly progressing cases it is seldom that a person can not afford to wait for a reasonable amount of maturity before having extraction performed. Such patients should be made acquainted with the fact that in those rapidly progressing cases that are accompanied by swelling of the lens the difficulties of extraction are greater on account of the shallow anterior chamber and impossibility of making a proper corneal section, and the tenacious soft lens substance requires more manipulation to remove it, thus increasing the liability of postoperative inflammation. As a result of all this, with consequent slow recovery, no time is saved by having the operation early, even though the ultimate results are as satisfactory as they would be by waiting for practical maturity of the lens before consenting to extraction.

In those rapidly progressing cases in which there is no swelling of the lens and attending shallowness of the anterior chamber, the recommendation of operative interference should depend on uselessness of the other eye and extraordinary physical or mental conditions which make it advisable to hasten the recovery of vision, and in such instances I consider most persons who are unable to read Jaeger, No. 12, as proper subjects for operation.

In not a small proportion of cases the process of opacification is slow, while in some instances the cloudiness of the lens proceeds until useful vision has been lost, and then becomes practically stationary, with a portion of the lens still more or less transparent. Becker[7] describes a form of premature senile cataract in which "cloudiness develops in the nucleus between the fortieth and fiftieth year after the normal sclerosing process in the lens is far advanced. This cloudiness gradually extends into the transparent cortical substance and has a peculiar white, almost milky, color. This cataract is exceedingly slow in its development, but finally becomes a total cataract. The individuals show in their general appearance that their health has been disturbed for a long time. They are people who have been reduced by disease, excessive bodily exertion, many and difficult labors, material want, grief and care." Becker further states that, without in such cases being able to demonstrate a diseased condition of the nutritive fluids of the body, we may look on the general premature senility of the entire body as a cause of the failure to form the nucleus, which is a feature of a lens which becomes diseased in this manner.

Cortical cataracts are usually progressive, but frequently the progress is so slow that a long period intervenes between the time when cloudiness of the lens interferes with vision and the time when opacification is complete and the cataract may be said to be mature.

In these cases of slowly progressing cataracts of both eyes which may require months or even years to reach maturity, it is an unnecessary hardship to await natural maturity of the lens before adoption of measures for the restoration of vision, and a recognition of this fact led some operators to the adoption of the practice of artificial ripening of the cataract. Several methods have been recommended for hastening the process of ripening, among which may be mentioned simple division of the anterior capsule with a knife needle, iridectomy combined with some form of trituration of the lens, or paracentesis of the cornea combined with external massage.

In my own experience I have found that a preliminary iridectomy alone is usually sufficient to hasten artificial ripening of the cataract, though I doubt the propriety of generally subjecting the eye to the risks of two operations, including the preliminary iridectomy, either with or without trituration of the lens, and the subsequent extraction, when the same end may be secured with equally good results by the single operation of extraction. So far as the value of a ripening operation is concerned, I believe, as has been stated by Weeks,[8] "that the operation for hastening the maturation of the lens does not sufficiently increase the facility of removal of the cataract to warrant the extra risk and trouble to the patient."

The state of vision in slowly progressing senile cataracts of both eyes, which warrants operative interference, will vary in different individuals. In my judgment, when vision has been reduced so that ordinary type can no longer be read, both pleasure and business are suffering from the interference, and the deprivation, if long continued, usually has a more or less detrimental effect on the physical and mental condition of the individual. In such cases I do not hesitate if, aside from the semitransparency of the lenses, there are no contraindications, and the patient has been made acquainted with the possibilities as to secondary cataract requiring discission and mild postoperative inflammation, with delayed recovery. I do not expect to encounter any greater difficulty in extracting a lens that is one-third opaque than one that is two-thirds opaque, for in both instances about the same amount of manipulation of one kind or another is required to free the eye of soft lens material, and no more lens substance is apt to be left in the one case than in the other, all things being equal.

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[7] Zur Anatomie der Gesunden und Kranken Linse, 1883.
[8] THE JOURNAL A. M. A., Dec. 15, 1900.

The difficulties attending removal of the lens in its entirety have deterred many operators from attempting extraction of unripe cataracts, for no operator from choice will face certain dangers of iritis and secondary cataract which invariably follow if any considerable amount of soft lens substance is left in the eye; and every operator knows that efforts to tease out the cortical remains alone carry with them the possibilities of trauma, which may provoke irritation or possibly result in rupture of the zonule and loss of vitreous.

Successful results from the extraction of immature cataract must, therefore, come from the adoption of methods which make it possible to remove, at the time of operation, practically all the cortex, with a minimum amount of trauma and subsequent inflammatory reaction, and the employment of such postoperative treatment as will tend to limit the effects of inflammatory reaction and promote resorption of any retained cortical substance. In my judgment the operative essentials to bring about the result are: First, a large corneal section, embracing not less than two-fifths of the corneal circumference; second, an iridectomy with a fairly large coloboma extending to the ciliary border; third, a large opening in the capsule by two incisions at right angles to each other; fourth, gentle irrigation of the anterior chamber with a sterile normal salt solution, after the extraction of the nucleus, if much cortex remains; fifth, the early and free use of atropin, and, sixth, the use of dionin, after the corneal wound has closed, to promote resorption of lens débris.

The advantages of a large corneal section are embraced in the ease with which the hard nucleus is removed without undue manipulation of the eyeball, and the increased certainty with which the irrigating fluid and soft cortical material pass out without provoking irritation from damming up in the anterior chamber.

The coloboma from the iridectomy not only facilitates removal of the soft cortical substance by furnishing a sluice-way for its escape and averts secondary iris prolapse, but tends to prevent the development of postoperative glaucoma.

The reason for the large opening in the capsule is obvious, for, with an insufficient opening, which may not be enlarged by the escaping small hard nucleus, the collapsing capsule may retain within its folds considerable quantities of lens substance which it would be difficult to remove. These enclosed masses of lens substance when cut off from the aqueous by collapse of the capsule are not resorbed, but remain to form a white membranous cloudiness or secondary cataract. If the opening in the capsule is sufficiently large, the cortex remaining after the extraction of the nucleus, even when in considerable amount, will swell up and become resorbed. This swelling of the retained cortical substance, however, with the production of an iritis, which even the liberal use of atropin does not always control, is one of the complications which we should make an attempt to avoid, and indicates the necessity for the adoption of more effective means for the removal of the soft cortical substance at the time of the extraction than is accomplished by stroking and other manipulations ordinarily employed.

The most effective means for removing the cortical remains is irrigation of the anterior chamber. Several methods have been advocated, but the one preferred is that of Lippincott, in which a continuous stream is allowed to flow by gravity through a small specially constructed canula, into the anterior chamber, the force of the stream being properly regulated by the height at which the reservoir is held, and the flow being entirely under the control of the operator, who may stop or start the stream by the use of a suitable lever. To avoid trauma, only the tip of the canula should lie between the lips of the corneal wound, and the stream should have only such force as is given it by elevating the reservoir no higher than is necessary to establish a continuous current by gravity.

Until recently I have also used with great satisfaction the method advocated by Dr. Flemming Carrow, in which the anterior chamber is irrigated with a stream from a wash bottle designed something like an ordinary bulb atomizer and having a specially constructed tip for irrigation purposes. While excellent results may be secured with this apparatus when properly employed, the objections to it are that unless the operator employs unusual delicacy and steady pressure on the rubber bulb, the stream is apt to possess too much force, with consequent trauma to the tissues. Also, unless due care is observed, air is likely to be forced into the anterior chamber, and the bubbling, with its unpleasant sensations, cause the patient to make some unexpected move which may prove disastrous. The originator of the device, who has had a very large and very successful experience in cataract extraction, does not direct the stream directly into the anterior chamber, but allows it to flow across the lips of the corneal wound, thus creating a very gentle but continuous current through the anterior chamber, with the result that the bulk of the soft cortical lens substance is carried out.

Those who practice irrigation of the anterior chamber vary in their preference as to the solution to be used. Sterile water, boric-acid solution and physiologic salt solution are about equally employed. In my own practice physiologic salt solution is preferred as being less likely to produce irritation from its own qualities.

Irrigation, if it is to be accompanied by a minimum amount of irritation and yet be effective, should be carried out with the utmost delicacy. The stream should be continuous, but possess no more force than that obtained by gravity when the reservoir is just high enough to create a current; and less trauma is likely to result if the current is directed into the anterior chamber on a line with the corneal section. Prolonged irrigation should also be avoided, as it is entirely unnecessary and is apt to be attended with increased trauma. If the capsular opening is large, it is seldom that the bulk of the soft cortical substance is not removed, but, if not removed, prolonged irrigation is not warranted, as much of the remaining lens substance will be resorbed by the action of the aqueous, and if not resorbed had better be subsequently divided by a discission operation rather than removed by prolonged irrigation or other manipulations which increase the possibilities of trauma and resulting serious inflammatory reaction.

It must be admitted that, in spite of proper care exercised in the performance of this procedure, in nearly all of the cases more or less iritis is the rule rather than the exception. This is due to the slight trauma necessarily following the irrigation and the irritation produced by the swelling of the remaining soft lens substance. In the majority of instances this iritis produces no serious consequences if atropin is used early and continued until all signs of irritation have disappeared. In many cases the irritation of the iris is no more than accompanies the extraction of mature cataract, but it is well to anticipate it and to adopt the proper medical measures early in the progress of the case. It has become my practice to anticipate such trouble by using atropin at the time of the first dressing, 36 to 48 hours after the extraction.

A remedy that I have found of decided service in promoting resorption of lens débris following cataract extraction is dionin. This drug, as has been pointed out by Darier,[9] possesses decided lymphagogue properties, and further experience in its use to promote resorption of cortical remains warrants me in reiterating a statement which I have previously made[10] that "the remarkable results secured by dionin in clearing the pupillary space following cataract extraction has led to the belief that, with the more or less general employment of this drug, after cataract extraction, secondary operations will be lessened in number." It should be remembered, however, that some persons apparently do not react to dionin, and in such I have not been able to detect any favorable action in promoting resorption of lens débris, but it may be said in its favor that if it produced no favorable action it certainly has produced no unfavorable results.

Until the susceptibility of the patient to dionin has been determined it is best to begin with a 5 per cent. aqueous solution, and, owing to the active smarting produced, it is advisable to precede the application with an installation of cocain. Owing to the smarting, with involuntary tight closing of the eyelids, with attending pressure on the eyeball and the sneezing that is occasionally induced, it is also advisable to use dionin only after the corneal wound has been securely closed for a period of from five to seven days.

In susceptible persons dionin produces marked vascular injection, with edema and extravasation of lymph, and in my experience the more marked the reaction in this respect the more marked is the favorable action in promoting resorption of lens débris; in fact, the strength of the solution is increased to 10 per cent., or the pure powder is used, in an endeavor to produce such reaction in those who do not apparently respond to the usual effect of the drug. Unless there is decided reaction the applications are repeated from two to four times per day for a period of four days, at the end of which time a certain tolerance is established and no further beneficial effects may be expected until an interval of at least a week has elapsed. While there are a few cases in which this remedy seems to have no appreciable effect in promoting resorption of the cortical remains, in a larger number of cases the results secured in effecting a clearing of the pupillary space, even where a considerable quantity of cortical lens substance has remained, have been so strikingly favorable that I feel warranted in unhesitatingly recommending the employment of this measure as a routine practice after all cataract extractions. I am still further influenced in giving this recommendation because of the fact that dionin has a marked favorable action in the treatment of iritis, in promoting the absorption of exudates and increasing the effect of atropin; and, as iritis accompanying swelling cortical lens remains follows cataract extraction, there is double reason for the employment of dionin.

The extraction of immature senile cataract may be attended with more complications and less favorable immediate results than the extraction of mature cataract, but the final results, when the cases are properly handled, should compare favorably with the extraction of cataract in any stage. In the extraction of immature senile cataract in persons of any age I have learned to expect a certain amount of soft lens substance, but with a large opening in the capsule and the employment of irrigation the greater portion of the lens débris is removed, and what is not removed is generally resorbed either with or without the assistance of the action of dionin. Discissions, while necessary in a fair proportion of cases, are not, in my experience, so frequently required as formerly or before dionin came into favor as an agent to promote resorption of lens débris. Iritis, frequently seen, either produced by trauma at the time of the operation or subsequently by the action of the swelling lens substance remaining, is controlled by the early and free use of atropin.

Admitting that the immediate results from the extraction of immature senile cataract are not as good as in the extraction of mature senile cataract, on account of the greater possibility of having to contend with iritis and secondary cataract, it is nevertheless a fact that the ultimate results are equally as good, and this opinion is attested by many of the most prominent operators of the United States, whose views on this subject are appended to this paper. That the complications arising are no greater than those accompanying the extraction of hypermature cataracts, which form a considerable portion of the number of cataracts presented to the average operator for extraction, is also accepted as a fact, for in both classes of cases the development of an iritis and the formation of a secondary cataract are the rule rather than the exception. The slow recovery in a few cases, due to inflammatory reaction directly dependent on the effects of the operative procedures, while seemingly indicating that the operation has not been to the best interests of the patient, are not generally detrimental to the extent usually supposed; for under such measures as herein advocated the iritis usually completely subsides in from two to six weeks, soon after which, if required, the discission operation may be performed. Even with more protracted recovery the patient is usually favored with the restoration of vision much sooner than could possibly be expected had maturity of the cataract been awaited, and this at a time when the general health has not been impaired by the enforced inactivity and the mental disquietude occasioned by a prolonged period of waiting for complete opacification of the lens before extraction.

My personal experience in the extraction of immature senile cataract, while not large, has been very satisfactory. During the past four years, or the period during which I have followed the practice, I have extracted twenty-five more or less unripe senile lenses, and ten of the number have been operated on within the past fourteen months. In all the cases the ultimate vision has compared favorably with the vision obtained in the cases of mature cataract operated on either during the same period or before. In eight cases the vision was 20/20; in ten, 20/30; in two, 20/40; in three, 20/70, and in two, 20/200. Nine of the cases required secondary operations, and six should have had secondary operations, but for one reason or another did not have them. In all but two of the cases in which vision was under 20/20, there was secondary cataract, and, as some of those were lost sight of soon after the operation, it is possible that vision improved in course of time as a result of resorption of a greater amount of the lens débris. A striking feature of the eight cases having 20/20 vision was the fact that but three had a secondary operation, and the remaining five, which soon after the extraction gave evidence of requiring a secondary operation, obtained excellent results under the effect of dionin. Three of the latter cases were under 60, and one but a little over 50 years of age. Practically all of the cases had irrigation of the anterior chamber and few escaped at least a mild iritis, though the inflammatory action had nothing to do with the failure to secure good vision in any of the cases. All of the cases had the combined operation. In only three cases was preliminary iridectomy performed, and in all three, following the extraction, a subsequent operation for secondary cataract was required. All of the cases were what would be called uncomplicated, in that they had no marked choroidal or vitreous changes, swelling of the lens, or external evidences of disease. In all of the cases vision had been reduced below the patient's requirements.

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[9] Ocular Therapeutics, 1903.

[10] Ophthalmic Record, August, 1904.

With a view of obtaining information from other operators as to the practice of extracting immature senile cataract, the following inquiry was sent to a large number of prominent ophthalmologists: (A) Do you extract uncomplicated immature senile cataracts? If so, what is your rule as to (1) Age of patient? (2) State of vision of eye to be operated on? (3) State of vision of fellow eye? (4) Form of operation to be performed, simple or combined, or preliminary iridectomy and extraction later? (5) Irrigation of anterior chamber, and, if employed, what solution used? (6) Use of dionin to promote resorption of débris? (B) Generally speaking, what have been your results in extracting uncomplicated immature senile cataracts as compared to extraction of uncomplicated mature senile cataracts: (1) As to vision obtained? (2) As to development of secondary cataract requiring operation? (3) As to inflammatory reaction from operation? (C) What difficulties have you encountered in extracting immature senile cataracts? (D) What objection, if any, have you to extraction of immature senile cataracts?

While some of the questions were not answered even in a general way and others were answered in such manner as to admit of no definite interpretation, I find by analyzing the reports containing specific answers that out of 65 who responded, 25 have no hesitation in attempting extraction of uncomplicated immature senile cataract, 22 perform the operation with some hesitancy but apparently not from choice, 9 have serious objections to the practice, but in certain apparently urgent conditions take what they term the "risk" of the operation, and 8 do not extract immature senile cataracts at all, because they consider the final results bad in the majority of instances.

All who operate have as a condition of the operation that the eye to be operated shall have sufficient failure of vision to interfere seriously with the pleasures and pursuits of the patient, and an equal failure or complete loss of vision in the fellow-eye. In no instance is an operation advocated when there is vision in the better eye sufficient for the patient's needs.

In considering the advisability of operating, 32 do not consider the age, 3 place the age limit at 40 years, 3 at 50 years, 6 at 55 years, and 7 at 60 years. In nearly all instances, the form of operation selected is reported as varying with conditions presented, but the first choice is given as preliminary iridectomy by 27, combined operation by 18, and simple extraction by 10. Some say, and presumably all intend to convey the idea, that preliminary iridectomy is performed with the idea of artificially hastening the opacification of the lens before extraction. In a few instances mention is made of trituration of the lens at the time the preliminary iridectomy is performed.

Thirty practice irrigation as a routine measure or reserve it for those cases in which the soft lens substance does not come away easily by usual manipulations, and with four exceptions physiologic salt solution is the solution preferred.

Nineteen use dionin to promote resorption of lens débris, and out of this number nine report good results, the others reporting doubtful results or not referring to effect.

While nearly all report that secondary cataracts and mild postoperative inflammations, with slow recovery, are more frequent than in extraction of mature cataracts, they almost without exception report as favorable ultimate visual results as in mature cases.

It is quite possible that with an improved technic, including many if not all of the essentials herein advocated, that the development of secondary cataracts and postoperative inflammations will be reduced to the point where they will not occur more often than after extraction of mature cataracts. But even if this were so, the results obtained by the operators herein reported, as well as by myself, warrant me in recommending the extraction of uncomplicated immature senile cataract, irrespective of age, in all those persons who, on account of the clouding of the lens, have vision reduced to such a degree that the individual can not follow the ordinary vocations of life.

OPINIONS OF PROMINENT OPERATORS ON EXTRACTION OF UNCOMPLICATED IMMATURE SENILE CATARACT.

Herman Knapp, New York City: Yes. Uncomplicated, unripe cataracts can be operated on with a good prospect of success when the general and ocular conditions are favorable and a large corneal section can be made.

F. C. Hotz, Chicago: The question of extraction of unripe cataract can arise only if the vision of both eyes is so much impaired that the patient can not attend to his business any longer. As long as he enjoys fair vision in one eye, the operation is not warranted. If both eyes are affected I am guided by the condition of the lens whether to operate immediately. If the cataract presents an opaque nucleus enveloped in a cortex which, though not completely opaque, is sufficiently so that the pupil shows only a faint red reflex, I operate, and I find these cases yield generally as good results as the perfectly mature cataracts. But if the cortex shows sections of almost perfect transparency, I do not regard extraction advisable, because the transparent substance can not be gotten out cleanly, even by irrigation, and its subsequent swelling causes complications in the healing, iritis and dense secondary cataract. As in these lenses, the opacification usually progresses rapidly, I think it is wiser to let the patient wait a few months than to take any chances. But should the patient insist on having something done at once, I perform a preliminary iridectomy, and massage the lens to hasten the process of opacification. On the other hand, there is a kind of immature cataract, and I see them often, which I extract without hesitation, though the vision may be 20/100 or better and the ophthalmoscope shows good red reflex. These lenses show a rather uniform diffuse haziness without distinct nucleus, vary little in the course of a year, and never become completely opaque. When extracted, they come out as one semi-translucent yellow cake; there is no cleansing necessary; the pupil appears perfectly clear and black; and the results are excellent; in fact, I am almost inclined to say better than after extraction of the ordinary mature cataract.

John E. Weeks, New York City: Yes. In persons more than 55 years as a rule, who are unable to read ordinary primer type with the eye to be operated on and vision in fellow eye is lost or reduced so that the patient is unable to follow vocation. Preliminary iridectomy performed in many cases, combined operation in some, simple operation in a few. Irrigation with normal saline solution if any cortical lens substance remains. Results as compared with mature cases, very little difference. Degree of vision, taking all cases, perhaps a little less. Maximum vision not reached so soon. Vision 20/20 in about 30 per cent. of the cases. Secondary cataracts more frequent than in extraction of uncomplicated mature cataracts. Seldom have subsequent inflammatory reaction. Cortex more adherent to capsule than in mature, but not more so than in hypermature. If lens is shrunken, nucleus amber colored, anterior chamber as deep or deeper than normal, I do not hesitate to operate. If lens is large, asbestos striped and anterior chamber shallow, I hesitate to operate. Maturity does not always mean complete opacification of the lens substance. I b[illegible] ·ipening operation for the reason that the [illegible] s not sufficiently increased to warrant the [illegible] to the patient. Whenever in the development of cataract the vision is reduced to such a degree that the individual can not follow the ordinary vocation of life, provided there is any reason for not waiting until the cataract is matured, I do not hesitate to advise operation.

G. E. de Schweinitz, Philadelphia: I may say in general terms that I very frequently extract immature cataract, but that I do not extract it if the lens is in the stage of swelling, which I believe to be distinctly a contraindication, especially if associated with the swelling there is much shallowing of the anterior chamber. I do not believe that it is at all necessary to watch for what we used to call full maturity, especially if the patient is past the age of 55 or 60. I always make an iridectomy if I extract an unripe cataract, and preferably a preliminary iridectomy, which I believe to be far the safest way of dealing with these cases. I do not know how many unripe cataracts I have extracted, but the number is large. I have never had a serious disaster, although I have been obliged on some occasions to make more than one discission subsequently to get rid of cortical remnants. My experience with washing out the anterior chamber is a very limited one, as at one time I was very positive that it was a bad procedure. I have begun to change my views, however, since seeing some very excellent results in the hands of some of my friends, and I think that hereafter, should I meet with cases in which it was difficult to remove remnants in extractions of unripe cataracts, I would certainly use irrigation. In general terms, I would say that my operations for extracting unripe cataracts have been quite as good as those which I obtained after extracting ripe cataract, although the procedure has been more trouble in some instances. I believe it is better to extract an unripe cataract than it is to do a ripening operation.

Charles H. May, New York City: Yes, in persons of any age if the vision in each eye is sufficiently reduced to interfere with the patient's usual occupation. The combined operation is generally preferred, but if the cataract occurs in an individual in whom the other eye is blind, preliminary iridectomy is performed. Irrigation with physiologic saline solution is employed if cortex is left. Dionin not used. Results compare very favorably in the end with results in extraction of mature cataracts. Secondary cataract relatively more frequent, and as a rule rather more inflammatory reaction. No special difficulties encountered in extraction of immature cataract and no objections to the practice.

Edward Jackson, Denver: Yes, in persons of any age if the case presents the visual need, i. e., vision in each eye reduced so as to interfere with patient's usual occupation. The simple operation preferred, but in certain cases the combined. Irrigation rarely employed, but when used, physiologic salt or boric-acid solutions preferred. Have not tried dionin. Results as satisfactory as in extraction of mature cataract and equally good vision ultimately. Secondary cataract more frequent, but by no means constant. No greater inflammatory reaction. Difficulties encountered are those connected with removal of cortex. My only objection to extraction of immature senile cataract is that the immediate result is not so good. This does not deter me from operating in suitable cases.

Charles H. Williams, Boston: Yes, in persons of any age having good or fair general health when vision in eye to be operated on is less than 1/10, and vision of fellow eye is reduced so that the patient can not do necessary work. Simple extraction preferred. Employ irrigation with one-half of 1 per cent. salt solution if much cortex is left. Do not use dionin. Results about the same as in extraction of mature cataract. Results sometime depend more on the general health and disposition of the patient than on the question of maturity of the cataract. Secondary cataract occurs more frequently than in mature cataract. Inflammatory reaction perhaps a little more frequent. Ultimate results as good as in extraction of mature cataracts.

H. D. Bruns, New Orleans: I sometimes extract immature cataracts in persons of any age if there are no contraindications in the general health of the patient or the condition of the eye to be operated on. State of vision must be inability to read ordinary print with eye to be operated on and an equal disability in fellow eye. Operation preferred depends on circumstances. Unless there is some reason in the disposition of the patient, or unfavorable local conditions (rigidity of pupil, elevated tension, corneal opacities, etc., etc.), I always do simple extraction. If the section has been too small, iris does not reduce well, and is bruised by manipulation, much cortex is left behind, or much opaque capsule, patient restless and causing prolapse after one or two successful reductions, I at once proceed to do iridectomy. If at end of forty to forty-eight hours, when dressing is removed for first time, there is prolapse, I do iridectomy then. All these reasons, circumstances and conditions incline me to iridectomy much more in case of immature than mature cataracts. I use irrigation sometimes, but prefer to do without it, and without anything that increases the amount of trauma and the number of instruments introduced into the eye. I do not use dionin. Results are practically the same as in mature cases. Have seen no striking difference in the ultimate vision. Nearly always there is denser secondary cataract, and usually more inflammatory reaction, owing to greater traumatism in getting away cortex and denser contracting secondary cataract. Difficulties encountered are those connected with removal of cortical lens substance left behind when nucleus delivered. I have no objection to the practice if indicated, i. e., patient so blind in both eyes as to be unable to read or amuse himself with near-work. So long as the patient can read and write and pursue ordinary vocation with one eye I decline to do any extraction in senile cataract. Patient often dies before operation is necessary. Cataract extraction is surely a major operation. The shock is more than it seems the patient or we anticipate. I am convinced that it often hastens [illegible] ·ath of old people. Slight immaturity I [illegible] ·en patient has but one eye I always do [illegible] whether cataract is mature or not. In such cases I would wait for a greater degree of maturity than where the patient had both eyes operable, as the patient should have the best possible chances for the restoration of vision in his only eye.

Vard H. Hulen, San Francisco: Yes, in persons of any age. No rule, but prefer older patients. Vision of patient must be so poor in each eye as to interfere with ordinary pursuits, and cataracts of very slow maturation. Prefer the combined operation, but sometimes do simple extraction. Practice irrigation of the anterior chamber with normal saline solution if much lens matter remains. I have not tried dionin. Results about the same as in extraction of mature cataract and equally good vision. Secondary operations more often necessary than following extraction of mature cataracts, and expect inflammatory reaction more often. No special difficulties encountered, but more manipulation required in removing soft lens substance. Have no objections to the practice when patient's sight is so reduced as to incapacitate individual.

Frank C. Todd, Minneapolis: I frequently extract immature cataracts, and am not governed so much by the age of the patient as by other conditions; i. e., the slow progress, with poor vision in the fellow eye. When the vision interferes with going about, or in a younger patient who would otherwise be able to follow some vocation, I extract immature cataracts or do a trituration, providing the vision in the fellow eye is poor enough to interfere with going about or with occupation. I prefer, as a rule, the combined operation, or preliminary iridectomy with trituration, and extraction later. I have had no experience with either irrigation of the anterior chamber or the use of dionin. As compared to the extraction of mature cataract, my results have been equally as good There are a large percentage of secondary cataracts, except when trituration has been performed. The inflammatory reaction is not more than after the extraction of mature cataracts, though atropin should be used for a longer period or until the soft matter has had time for absorption. In general, I would say where a cataract has made good progress in ripening, I wait until it is mature or nearly mature: but when progress is slow and the patient is incapacitated by poor vision in both eyes, I extract the one that is most mature, and in case it is very immature and very slow in maturing I do a trituration. I am aware of the fact that this operation of trituration is frowned on by many, but I am convinced that it has its place, and I am further convinced that it makes a difference as to how the operation is done. When properly done it is better than to extract a very immature cataract, and after extracting an artificially ripened cataract I have never had to do a needling or secondary cataract operation.

J. A. White, Richmond, Va.: Yes, but only in cases of very slow development. No rule as to age of patient. I never operate as long as patient has good vision in one eye, but when vision is no longer useful in either eye, and the cataracts have been long developing, I operate whether they are mature or immature. Prefer preliminary iridectomy, or iridectomy at the time of extraction. Sometimes use irrigation with normal salt solution. Have never tried dionin. Results nearly the same as in extraction of a mature cataract, and vision secured practically the same. Secondary cataract or cloudy capsule is more frequent, and iritis more common. No difficulties encountered, except that the cortex is more sticky, especially under 60 years of age, and is harder to remove. Do not object to extraction of immature cataract if the other eye is failing rapidly, otherwise prefer to wait. I sometimes, however, under 60 years of age, hasten maturity by triturating the lens. I have removed about 600 senile cataracts, and among them a number of immature ones, but can not say exactly how many.

William Zentmayer, Philadelphia: Yes. Age not a factor. Am guided by circumstances of the patient as to vision at time of operation. If necessary to earn a livelihood, would operate as soon as the patient is incapacitated for that work. If independent, would advise him to await maturity. Prefer either combined operation, or preliminary iridectomy and extraction later, dependi[illegible] on the amount of unripe cortex. Irrigation [illegible] ber with physiologic salt solution employed [illegible] invariably. Dionin used to promote absorption of debris. Results, so far as vision is concerned, about as good as in mature cataract. Secondary cataracts more frequent and inflammatory reaction more marked. The difficulties encountered are principally those connected with removal of the soft cortical matter. The objection to extraction of immature cataract is that it does not afford the patient the best condition for a successful result, for the reason that the eye is usually subjected to a larger number of operations with attending risks.

Swan M. Burnett, Washington: I prefer not to operate on an immature cataract, as I think the risk is greater, but if both eyes are affected and total blindness in both eyes is near, I take the chances to gain one eye for use. I seldom do an iridectomy for any kind of extraction, and have not tried irrigation of the anterior chamber. I have had some experience with the use of dionin to promote resorption of débris following cataract extraction and am pleased with the results. As compared to extraction of mature cataract, the chances for success are not so great, and the healing process is longer, with greater liability to complicating inflammation. My objection to the extraction of immature senile cataract is, therefore, the greater danger from postoperative complications.

Leartus Connor, Detroit: Yes. Age is not considered a factor, only the reparative power. Vision must be useless for any work. Prefer preliminary iridectomy and extraction later, though sometimes do the combined operation. Irrigation with weak boracic-acid solution sometimes [illegible] in used to promote resorption of any lens [illegible] ults not greatly different than in mature [illegible] cataract not much more frequent, but sligh[illegible] reaction. There is nearly always greater difficulty in removal of all clear lens. The objection to extraction of immature senile cataract is that it is impossible to know when all of the cortical matter has been removed, and unless removed there is apt to be greater reaction and perhaps the development of secondary cataract requiring further operative attention. This does not deter me from operating in suitable cases.

F. B. Eaton, San Francisco: I have records of the extraction of a number of traumatic cataracts in patients 40 and above, in which the conditions were about the same as in an immature senile cataract, and the *principle of treatment* essentially the same. The combined operation was performed, with irrigation of the anterior chamber with normal salt solution for the removal of soft cortical material. For irrigation, I have used a device of my own, consisting of a piece of small glass tubing with soft rubber bulb at the end, the nozzle being appropriately tapered. I irrigate the anterior chamber freely, or until the pupil is perfectly black. I have never had a bad result which I thought could be attributed to the irrigation, and this is probably because the nozzle is so large that it produces a gaping of the wound, thus preventing the pressure of the fluid in the anterior chamber. I have not tried the use of dionin, but believe it indicated in certain cases. My objection to the extraction of immature cataract is that there is increased risk from inflammatory reaction and secondary cataract.

William H. Wilder, Chicago: Yes. Age is not a consideration. Vision must be so low as to prevent following occupation. Usually perform preliminary iridectomy, but sometimes the combined operation. Rarely use irrigation of the anterior chamber. Have used dionin to promote absorption of débris, and consider it entirely proper. *Results not quite so satisfactory as in mature cases*, for not so good vision recovered and usually a secondary operation is necessary. Iritis is also more common as a result of swelling cortical remains. The cortex comes away with difficulty, and what is left is not always readily absorbed. I would not hesitate to operate on immature cataract if the sight of both eyes is affected to the degree of helplessness. If the patient has one good eye I should advise waiting for the cataract to mature, or become *nearly mature, and would content myself with a preliminary iridectomy.*

C. R. Holmes, Cincinnati: Yes, in persons over 40, having vision 50 per cent. or less in both eyes, or 50 per cent. in the one eye, the other being blind or at least useless. Prefer combined operation, or preliminary iridectomy and extraction later in certain cases. I do not use irrigation, and have not tried dionin. Final results as satisfactory and vision as good as in extraction of mature *cataract, though secondary cataracts requiring operation are more* frequent, and there is usually slightly more postoperative inflammatory reaction. Have encountered no [illegible], but there is more soft cortical substance to be removed than in a mature cataract. Do not object to performing the operation in proper cases.

W. C. Posey, Philadelphia: I believe that immaturity of a lens is no contraindication for its extraction, my rule being to remove the *ripest lens in all* cases of cataract, irrespective of age, as soon as vision is so low in the best eye that the patient is unable to get about or perform the ordinary duties of life—in other words, when the test-cards show the vision in the best eye to be reduced to about 3/60. Under such circumstances I do one of three things, according to the circumstances of each case: First, a ripening operation; second, a preliminary iridectomy; third, extraction with iridectomy. If the most affected lens is very unripe, I open the anterior chamber and triturate the anterior capsule of the lens directly, removing the lens at the expiration of a few days or several weeks, according to the effect of the operation in ripening the lens. If there is no need for haste, preliminary iridectomy is done, it being found that the performance of this operation frequently aids in the ripening process as well as facilitating in the removal of the lens later. If a ripening operation or a preliminary iridectomy is not indicated, the lens is removed by the combined operation, the simple operation being reserved for mature cases only. After the removal of an immature lens the anterior chamber is frequently irrigated with a McKeown irrigator. Dionin in the strength of 4 to 8 per cent. has been found of value in promoting absorption of the débris, and has been used in many cases during the past year. I am convinced that my results in operating on immature cataracts in the manner described have been fully as good as those on mature lenses. I should say that fully 80 per cent. of the cases obtained practically full visual acuity, but I think a discission for secondary cataract was required in at least 70 per cent. of the cases. Inflammatory reaction has followed the operation in many instances, but not oftener I should say than after the removal of a mature lens. I know of no difficulties or objections to the removal of an immature lens. If possible, I think it best to avoid operating in the stage of greatest swelling, as in such cases the cortex shows a greater tendency to adhere to the capsule than when the cataract has proceeded further toward maturity.

E. E. Holt, Portland, Maine: Yes, in persons above 50 years whose vision has been so reduced that they are unable to count fingers. Formerly I did a preliminary iridectomy or the combined operation, but now do simple extraction. Irrigation used when thought necessary for the removal of soft cortical material, and dionin also used to promote resorption of any lens substance remaining. Final results good and vision not different than following extraction of mature cataracts. Do not believe that there have been any more secondary cataracts, or that I have had more secondary reaction than occurs with mature cases. In some instances the lens was more difficult to start out of the capsule. I have no serious objections [illegible]ature senile cataract, and am willing to [illegible] the patient when it is made after due [illegible] I do not remember of a single instan[illegible] or I regret that the operation was performed.

Robert L. Randolph, Baltimore: Yes, in persons over 60 who have loss of reading power. Perform combined operation always, and some of my best results followed preliminary iridectomy. Do not use irrigation or dionin. Ultimate results satisfactory; in fact, I do not recall a failure. Final vision about the same as in extraction of mature cataract. In nearly every case there was secondary cataract *requiring discission, and a mild iritis in every* case. I do not object to performing the operation in such cases as mentioned.

S. D. Risley, Philadelphia: I believe that while opacity of the lens is a disease of advanced life, it does not in all probability depend on senile change, but is originated in local pathologic states involving the nutrition of the eye itself; that hence in the stage of incipiency it is amenabl[illegible] measures as are calculated to remove the [illegible]hich it depends; that if treatment fails to [illegible] degeneration in the lens, by virtue of the [illegible] eye will be in a better condition to submit to the trials of operative interference. I never attempt extraction by the simple method in a dark gray or amber-colored homogenic lens that has ripened slowly, or on one that is translucent. In such cases secondary capsulotomies are almost invariably required, and there is a tendency to an inflammatory reaction from the slight traumatism. In these cases a preliminary iridectomy is performed, and from four to six weeks later the extraction. If after delivery masses of gray cortex remain, either free or adhering to the *capsule, their removal by irrigation* by a sufficien[illegible]alt solution is preferable to the [illegible]rable rough manipulation for its [illegible] are almost without exception required in these cases. If inflammatory reaction follow without evidence of infection, the great liability to local manifestations in those of rheumatic or gouty diathesis should be borne in mind as indicating the general therapeutic measures to be adopted. *The value of salicylic acid in these cases I* have many times seen demonstrated.

Flemming Carrow, Detroit: Yes, in persons of any age when reduction in vision prevents transaction of ordinary business. Do the combined operation in nearly every case. I always irrigate with a device of my own, using saturated solution of boracic acid, whenever any lens substance is left in the anterior chamber. I do not use dionin. Results as satisfactory and vision secured is as *good as in extraction of mature cataract. About 50 per cent. of* the cases require a discission of secondary cataract, and the same percentage of cases have postoperative inflammation. I do not object in the least to extraction of immature cataract under conditions mentioned. I am forced to express the opinion that any method of irrigating the anterior chamber after cataract extraction is productive of iritis unless used in the most delicate manner. This I state with great positiveness; but with a lot of lens débris *left in the anterior chamber which can not be removed by spoon*, stroking the cornea or any other maniplation, irrigation seems the best procedure for accomplishing the desired result. This applies to cases of hypermature cataract as well as those which are immature. I know that I am stating it properly when I say that the results are just as good if the senile cataract is removed while the patient is still able to read Jaeger No. 14 or Snellin 20/200. A man with this vision is practically put out of business, and *there is no use waiting.* This is not stated on the experience of ten or twenty cases, but on hundreds. I not only operate on these cases now and then, but it is my rule. I have operated on fourteen cases recently, eleven of which were immature, and the results were better in the immature cases than in the three which were mature. I do, however, expect a little postoperative iritis, which is probably due to irrigation of the anterior chamber. This, however, does not interfere with good results if atropin is early and *persistently* used.

M. H. Post, St. Louis: Yes, in persons of any age when cataracts reduce vision so that magazine type can not be read. Combined operation preferred. I do not irrigate the anterior chamber, and have not tried dionin. Ultimate results as good as in extraction of [illegible] experience secondary cataracts are no mor[illegible]ure cases, though there is possibly a little [illegible]ction. No objections to the operation if [illegible] *interference.*

J. M. Ray, Louisville: Yes. Age not considered if patient is in good general health. Would operate as soon as the patient is unable to follow vocati[illegible]on performed, but sometimes a preliminary [illegible] with normal saline solution when necessa[illegible] of soft lens substance. Dionin not used in this class of cases. No greater reaction than in mature. No difficulties beyond leaving too much soft lens substance in the *anterior chamber which takes a long time to absorb*, but which does absorb without trouble in time. Prefer to have an opaque lens, but have no great objection, in suitable cases, to removal of a semitransparent lens.

Alvin A. Hubbell, Buffalo: Yes, in persons over 55, with vision in eye to be operated on 10/60 and vision in fellow eye nearly as poor. Usually perform preliminary iridectomy, followed by extraction later. Employ irrigation when there is much soft cortex, using *sterile normal salt solution* and Lippincott irrigator. Do not use dionin. Results much the same as in mature cases with vision good in fellow eye never operate on the cataract. Prefer more frequent, and a little more reaction in a small proportion of cases. No particular objection to the practice. There is a little more danger of iritis.

G. C. Savage, Nashville: Yes, and regardless of age, other conditions being favorable, when vision is too low to be useful. When *vision good in fellow eye never operate on the cataract. Prefer* combined operation. I never irrigate and I never use dionin in this class of cases. Results just as good as in mature cases with vision from 20/50 to 20/20, greater number about 20/30 finally. In nearly all cases I do a secondary operation in from one to twelve months. Only occasionally is there any reaction. Have lost only one eye from secondary operation. Have no objection whatever to practice of extraction of immature cataract.

J. H. Claiborne, New York City: Yes, age not considered, provided patient in good condition. Vision in eye to be operated on, fingers at 1 foot to 20 feet. Vision in other eye not useful. Combined operation performed. As a rule, do not use irrigation, but when employed use boric acid or normal saline. Do not use dionin. Results not quite so good as in mature cases. Useful vision, but not so good as in mature cases. Secondary cataracts in nearly all cases, but no more reaction than usual in any extraction. *More difficulty in removal of the cortex that remains.* Prefer to wait unless the patient is impatient or the conditions of his life demand extraction. Best results are obtained in sclerosed immature cataracts.

C. A. Veasey, Philadelphia: Yes, in persons over 55 years of age approximately, if patient is in good health, and when vision in eye to be operated is reduced so as to make it difficult for patient to get around, and there is advancing opacity of lens in fellow eye. Combined *operation performed.* If one eye has been lost, always a preliminary iridectomy. I seldom irrigate; if I do I use normal saline solution. Had little experience with dionin, but in three cases it certainly seemed to assist. Results as good as in mature cases, with equally good vision. A large percentage of my cases required discission of capsule, but so do mature cases. Postopera[illegible]flammation not frequent if lens matter is removed by gentle [illegible]ore difficulties attending extraction [illegible] cortex is removed by stroking cor[illegible]e cases removed by irrigation. Have [illegible]ve been doing it for ten years.

[illegible]: Yes, in patients 55 and over who have lost vision in both eyes for pleasure and business. The order of preference in the form of operation to be performed is: First, preliminary iridectomy, with extraction later; second, extraction with the combined operation; and third, simple extraction. Various circumstances and conditions guide me in the selection of the operation. Irrigation when employed is with normal salt solution. Dionin is not used. Generally speaking, the results in extracting immature senile cataracts have been equally as good in every respect as the results in extraction of mature senile cataracts. Secondary cataracts requiring operation are present in perhaps 90 to 95 per cent. of the cases. There is also a greater tendency to iritis unless preliminary iridectomy has been done. The difficulties in extracting an immature cataract are those concerned in the removal of all of the lens. I have no objection to the extraction of immature senile cataracts *if loss of vision* warrants the operation.

Würdemann & Black, Milwaukee: Yes, in patients over 45 whose vision in both eyes is below 6/60. Preliminary iridectomy and secondary extraction is preferred, and the anterior chamber is irrigated with normal salt solution. Dionin to promote absorption of débris is used in powder form. Results as satisfactory as in the extraction of mature cataracts. About 50 per cent. of our cases require secondary operations, and about the same number exhibit inflammatory reaction. Extraction of immature lenses usually requires larger corneal incision, and it is more difficult to complete the toilet properly. There is also a seeming greater predisposition to glaucoma following these operations. We have no objection to the extraction of immature cataracts when the vision is reduced as stated.

J. E. Colburn, Chicago: Yes, in patients over 60 with vision reduced below the patient's needs in both eyes. Have operated successfully at 48, 51 and 54. The form of operation to be performed depends on conditions presented. Sometimes preliminary iridectomy, sometimes the combined operation, and occasionally simple extraction. Irrigation of the anterior chamber is not employed, but dionin has been used in some of the later cases. The results in the extraction of immature cataracts have been as good as in the mature cataracts, other conditions being the same. Secondary cataracts are frequent, though inflammatory reaction from the operation is no more frequent than in the mature cases. No particular difficulties have been encountered, but it is important that the opening in the capsule be carefully and freely made. I have no objections to the operation other than those that would hold in any other form of extraction at any time.

J. T. Carpenter, Philadelphia: Yes, in persons past 50 years of age, whose vision in both eyes has been reduced so as to interfere with vocation. Preliminary iridectomy is always performed, usually with trituration of the lens. Irrigation never used except such as occurs with the use of the ordinary dropper and normal saline solution. Believe that dionin is useful in promoting absorption of the débris. Results are rather less favorable in extraction of immature cataracts than in the mat[illegible] secondary cataracts are almost invariably [illegible] is much more frequent than in the mature [illegible] encountered in the operation are the failure to get rid of the transparent sticky cortex. Objections to the operation are that there are greater difficulties connected with the operation, and a greater risk of inflammatory sequelæ. These, however, should not deter one from operating when vision has become so poor as to prevent the patient from getting around easily.

J. L. Thompson, Indianapolis: I do not like to operate on immature cataract if I can possibly put the patient off, but have been compelled to do so in a number of cases on account of the impatience of many of my patients who have become tired of waiting from year to year. In the cases of nuclear cataract in elderly persons, I extract without an iridectomy if the pupil dilates nicely, but in those which do not, I make a small iridectomy. I find that I can press out more of the cortical substance when an iridectomy is made than I can in simple extraction. The pupils look clear immediately after the operation, and moderately so at the first dressing, but soon begin to look hazy, and in most instances months elapse before the pupil clears up. I never now resort to any ripening process except in complicated and doubtful ones, when I make a preliminary iridectomy at least two months beforehand. In these cases the lens generally ripens of itself in a very few weeks without any further interference. Occasionally in these cases I have seen an acuity of vision of 20/20, but that is rare, even though a beautiful clear central pupil was obtained. My experience teaches me that a preliminary iridectomy is the safest *of all procedures for ripening the lens, even though the capsule* has not been touched. I used to irrigate the anterior chamber, but have abandoned the practice, as I did not find much benefit therefrom. I have had no experience with dionin. I have not found inflammatory reaction after the extraction of immature cataracts more than in cases of ripe cataract. The only objection I have found to operations of this kind is the great length of time it takes for the eye to clear up. I have had cases last nine months, supposi[illegible] on the capsule would have to be made, [illegible] see to go about with the other eye I put [illegible] time to time, dreading as I do secondary [illegible]ion, when to my surprise the patient would later come in smiling and with the exclamation "I can see," and on examination I have found a perfectly clear pupil.

A. R. Baker, Cleveland: Yes, in those of any age when useful vision in both eyes has been lost, and the operation is not otherwise contraindicated. Preliminary iridectomy is always preferred. Neither irrigation nor dionin have been used. Results have been almost as good as in mature cases, but secondary operations are more frequent. Inflammatory reaction is no greater than in the mature cases. No special difficulties have been encountered, and I have no objection to the operation.

Robert Sattler, Cincinnati: I make it a rule from which I rarely deviate not to extract immature cataract so long as the fellow eye has a fair degree of vision. I do not hesitate, however, if the fellow eye is defective, and there is an advance of the amblyopia, to do the operation with a preliminary iridectomy. Irrigation is not used, and I have had no experience with dionin. As compared to extraction of mature cataracts, the results are equally favorable, though ultimate good vision requires discission of secondary cataracts. I have no objection to the operation if the other eye is lost and functional examination and health of patient offers no contraindications.

Eugene Smith, Detroit: Yes, in persons 65 and upward whose vision in the eye to be operated has been reduced to counting of fingers, and vision in the fellow eye is useless or rapidly becoming so. The combined operation is preferred, though in suitable cases the simple operation is performed. Irrigation is not practiced, and experience in the use of dionin is too limited to pass an opinion as to its efficacy. Results as compared to mature cases are about the same, though [illegible] requiring operation are more frequent, as also [illegible] from the operation. Some cortex usually re[illegible] absorbed in the course of time. I have no objection to extraction of immature lenses in suitable cases.

Oscar Dodd, Chicago: Yes, in persons of any age when the vision in both eyes gets so low that business is interfered with. Preliminary iridectomy is preferred, but in many the combined operation is performed. Occasionally in selected cases simple extraction is done. Irrigation of the anterior chamber is not practiced, and while dionin has been used, its effects in my practice have been questionable. Results as compared to mature cataracts are equally good, though secondary cataract requiring operation is more frequent, and inflammatory reaction is also usually greater. Operation in these cases is more difficult, because it is hard to remove all of the soft cortex. I have no particular objections to the operation, but expect a longer time in obtaining satisfactory results.

Charles W. Kollock, Charleston, S. C.: Yes, in patients of any age in whom vision in both eyes has been sufficiently impaired so as to prevent going about, attention to business, or to seriously affect the nervous system. Preliminary iridectomy and extraction later is preferred, but the form of operation selected is the one that in each individual case seems best for obtaining good results. Irrigation of the anterior chamber is not practiced. Have had no experience with dionin. Results [illegible] mature cataracts are satisfactory. [illegible] operation are not more frequent in [illegible] ima-[illegible]y a little [illegible] ob-[illegible].

[illegible] Akron, Ohio: Yes, in patients of any age, [illegible] over 55 when there is need of the operation to restore useful vision. In those over 55 the vision in each eye should be reduced below 6/60. The combined operation is preferred, although occasionally a preliminary iridectomy is done. Irrigation of the anterior chamber is seldom practiced, but if so sterile water or physiologic salt solutions are employed. Have had no experience in the use of dionin. Results have been just as good as in extraction of mature cataracts, though secondary cataracts requiring operation are more frequent, and inflammatory reaction from the operation somewhat greater. The difficulties encountered are those concerned in the removal of the lens in its entirety. My objection to the operation is that secondary cataracts are more frequent, with attending risks of the secondary operations. I advocate the operation in those in whom the vision of both eyes is poor. If the vision of the other eye is good I do not operate unless the cataract has remained in the same state of maturity for a long time, and there is special reason for doing the operation.

C. D. Wescott, Chicago: Yes, in persons over 60, and have even operated on persons but little over 50 when vision in the eye to be operated on is no longer useful and vision in the fellow eye is failing rapidly. Preliminary iridectomy and extraction later is practiced in all cases of immature cataract. Irrigation is not employed, and two experiences with dionin have given doubtful results. As compared to extraction of mature cataract, results have been equally good, though discission has to be performed a little more frequently, and inflammatory reaction is also a little more frequent. I have no objection to the operation if the patient's necessities make it desirable.

F. T. Rogers, Providence, R. I.: Yes, in patients of any age if the general health is good, and when the vision in both eyes is so poor that the person can not go about easily or safely. Preliminary iridectomy is preferred and irrigation with normal saline solution is employed when indicated. Have had no experience with dionin. Results are quite as good as in the extraction of mature cataracts, though secondary operations are more frequent, as also inflammatory reaction. The difficulties encountered are those concerned in the removal of the soft lens material. Do not object to extraction of immature senile cataracts under conditions named.

George F. Suker, Chicago: Yes, in persons beyond 50 who count fingers faintly at 4 feet with the eye to be operated, and have about the same vision or a trifle better in the fellow eye. Preliminary iridectomy is preferred, though other forms of operation are sometimes selected, depending on circumstances. Irrigation of the anterior chamber with normal saline solution is employed, as also the use of dionin to promote absorption of débris. Results are as good as in extraction of mature cataract, though there is a greater tendency to the development of secondary cataract, and a tendency to greater inflammatory reaction, though this is not to be feared. The soft cortex is somewhat more difficult to remove. From a purely surgical standpoint I have no objection to the operation: it all depends on whether the patient is willing to wait for maturity or not, or on the time it takes the cataract to mature, even though the patient be willing to wait. Social environment is also a determining factor.

E. A. Shumway, Philadelphia: I prefer to wait until the cataract is mature unless social conditions are such as to make speedy restoration of visi[illegible] such cases preliminary iridectomy is of g[illegible] much cortex remains, irrigation of the a[illegible]cic acid solution should be used, with the [illegible] case of deeply set eyes, that the wound does not remain submerged in the fluid, as it collects in the conjunctival cul-de-sac. I have seen one case at least in which I thought infection took place in this way. I believe that dionin has a very decided influence in the absorption of lens débris, just as in the absorption of exudates, and that its action depends largely on the local reaction which it produces.

W. A. Fisher, Chicago: Yes, in patients of any age when the vision in both eyes is too poor for ordinary pursuits. The simple operation is invariably performed. Irrigation is not employed, and experience in the use of dionin for the resorption of lens débris has been limited. Results are just as good as in extraction of mature cataract, though secondary operations are slightly more frequent, as also inflammatory reaction. No particular difficulties have been encountered, and I have no objection to the operation.

Wendell Reber, Philadelphia: Yes, in patients over 60 who have less than 5/25 vision in each eye. Preliminary iridectomy is invariably performed. Irrigation of the anterior chamber is not employed. The use of 10 per cent. solution of dionin is invariably a rule. As compared to mature cases, my results show a trifling advantage in favor of the mature cases. Secondary cataracts are probably a little more frequent, and low iritis is the rule in almost all cases after extraction of immature cataracts. The presence of large quantities of cortex after the removal of the nucleus forms *the element of difficulty in the operation. I have no objection to* the extraction of immature senile cataracts that would not apply to any other cataracts.

E. C. Ellett, Memphis, Tenn.: I am much in favor of operating on unripe cataracts in one-eyed people, and people with double cataract when the vision of the best eye is so reduced as to interfere with safe locomotion and keeping the patient from working generally. I always do the combined operation in all cases, and in immature cataracts, if there is no objection to operating twice, I *prefer to do a preliminary iridectomy.* I do not find vision much of a guide as to maturity, as some eyes with a small central opacity see very little, while others with considerable peripheral opacities see very well. I operate when the patient is seriously inconvenienced by the cataract, no matter what the age. I irrigate the anterior chamber with normal salt solution, and by the practice have usually succeeded in removing practically all the cortex, thus making it unnecessary to use dionin. I have never had any trouble arising from the extraction of immature cataracts, and unhesitatingly recommend the practice. My views on this subject have already been briefly stated in an editorial which appeared in the *Ophthalmic Record* about one year ago.

Peter A. Callan, New York City: Yes, in persons over 40 whose vision in the eye to be operated on has been reduced below 20/70, *and whose vision in the fellow eye is reduced to 20/40.* Preliminary iridectomy and extraction later is invariably preferred. Irrigation of the anterior chamber with normal salt solution is performed when indicated, and dionin to promote resorption of débris is employed two weeks after the operation. Results have been as good as in the extraction of mature cataracts, though it is longer *until the eye is free from irritation. Secondary cataracts are* more frequent. I have no hesitation in operating on any immature lens, providing the needs of the patient require interference.

Allen Greenwood, Boston: Yes, in persons of any age when the vision in both eyes has been so reduced that coarse print can not be easily read. The combined operation is preferred, though the simple is preferred in suitable cases. Irrigation with normal salt solution is practiced, but I have had no experience in the use *of dionin. Results have been equally as good as in extraction of* mature cataracts, though secondary operations were required in about 50 per cent. of the cases. There is usually somewhat more inflammatory reaction, probably due to irrigation, but this promptly subsides under proper treatment. I have no objection to the operation in suitable cases.

Melville Black, Denver: Yes, in those cases in which the progress of the lenticular opacity in each eye is such as to cause lowering of vision beyond the useful point. If the patient has no occupation and is much inconvenienced by not being able to read, I should consider operation warranted. If a man with an occupation is no longer able to follow it because of poor vision, then his condition would warrant operation. I do not believe we are justified in requiring old people to wait for cataracts to mature if the opacification is *advancing equally in each eye, because such* persons may have wasted the only remaining months or years in which they might have been able to enjoy the fruits of vision obtained by operation. I prefer the simple operation, and employ irrigation of the anterior chamber with physiologic salt solution. Dionin is used a few days after the extraction to promote resorption of the débris. Results have been as good as in the extraction of mature cataracts, with about the same number of secondary cataracts requiring discission. Have not had inflammatory reaction, as a rule.

C. J. Kipp, Newark, N. J.: Yes, but not from choice, in persons of any age who as a result of lowered vision are unable to pursue occupation. The combined operation is generally preferred, though preliminary iridectomy is occasionally performed. Irriga*tion is not practiced and dionin has not been used. Results have* been less satisfactory than in the extraction of mature cataracts, for secondary cataracts requiring operation are nearly always to be expected, and the imperfect results as to vision form a decided objection to the practice.

J. S. Kirkendall, Ithaca, N. Y.: Yes, in those persons whose vision has been so seriously reduced as to inconvenience them in ordinary pursuits. The combined operation is performed, with large corneal section. Irrigation is not employed, and I have had no experience in the use of dionin. In all my cases of immature senile cataract I have had good results. Have had no inflammatory reaction of any consequence, but have always been obliged to do a discission. I do not hesitate to remove an immature cataract, all things being equal, but I prefer a mature cataract *if patient will wait.*

H. B. Young, Burlington, Iowa: Yes, in persons whose vision has been reduced so that it is difficult to get about safely. The simple operation is preferred, but combined operation sometimes accepted, depending on the nature of the case. Irrigation with physiologic salt solution is employed, but have had no experience in the use of dionin. Ultimate results compare favorably with results secured in mature cataracts. Discissions are generally required, for I prefer peripheric capsulotomy. The inflammatory reaction is no more serious than in the extraction of immature senile cataracts if conditions are otherwise good.

L. D. Brose, Evansville, Ind.: Yes, in persons of any age when the vision in both eyes is insufficient for the patient's needs. Preliminary iridectomy is preferred, otherwise the combined opera*tion. Irrigation is not employed, and experience with dionin is* limited. Results have not been quite as satisfactory as in the extraction of mature cataracts. Secondary operations are more often required, and inflammatory reaction is more frequently encountered. The objections are that such operations not infrequently require a *secondary cataract operation*: are more liable to be followed by inflammatory reaction, and hence apt to have a more prolonged recovery period: and the shallow anterior chamber requires greater care in making corneal sections.

Charles S. Bull, New York City: Sometimes operate immature cataracts in patients over 40 years of age in whom the vision of the eye to be operated on has been reduced two-thirds or more, and vision in the fellow eye lost or practically so. Preliminary iridectomy and extraction later is preferred, and irrigation with normal salt solution is employed. Dionin is not used. Results are not quite as satisfactory as in mature cases, owing to less acute vision. Secondary cataracts develop in about 40 per cent. of the cases, though inflammatory reaction has seldom occurred. In these extractions the difficulties are in removing all of the soft lens matter, and the manipulations increase the danger of loss of vitreous. I never extract aan immature senile cataract except to help *the patient's physical or mental condition, as, for instance, when* the other eye is blind or useless.

Harrold Gifford, Omaha: I extract immature senile cataracts only when I have to do it, i. e., when the patient needs sight and the cataract fails to mature after discission of the capsule. Age is not regarded. If the vision of the best eye gets so poor as to make life a burden, I urge a preliminary iridectomy, and in from two to eight weeks make a discission of the capsule, followed by extraction in from two to ten days. I seldom irrigate, but believe it worth while in *some cases. I have not used dionin in this class of* cases, but believe the indication is clear and shall try it. Results as compared to the extraction of mature cataract are not quite so good, as the vision is less acute, development of secondary cataract requiring operation, as also inflammatory reaction after the operation, are more common. My objection to the operation is the difficulty of expelling the cortex, or at least telling when all of the cortex has been expelled: hence the uncertainty as to when attempt at expulsion should cease. The cortex remaining favors infection and secondary cataract.

Lucien Howe, Buffalo: I very seldom extract immature senile cataracts, as the risk is usually unnecessary, and the results from any standpoint are not very satisfactory. When I do operate on these cases I prefer preliminary iridectomy when possible to get consent *for it, with irrigation with 1 to 10,000 sublimate solution if indi*cated. Dionin is not used. The development of secondary cataract and inflammatory reaction from the swelling of the clear lens fibers are sequelæ which *form a contraindication to the operation.*

Myles Standish, Boston: I have had comparatively little experience in extracting immature senile cataracts, as I never operate *under such conditions unless the case imperatively demands it.*

George C. Harlan, Philadelphia: I do not operate on immature senile cataracts by choice, as in these cases there is an increased *liability to the development of secondary cataract. Inflammatory* reaction from the operation, and occlusion of the pupil. I am more inclined to do the operation in those of advanced age in whom the vision in both eyes has been reduced so that the individual is unable to read. In these cases preliminary iridectomy is *preferred. Have had but little experience with irrigation, but* consider physiologic salt solution the best for the purpose. Have had no experience with dionin. General results as compared to the extraction of mature cataracts are not as good.

Charles A. Oliver, Philadelphia: No, for the reason that the final results are nearly always sooner or later more or less bad. In a very limited number of cases, for peculiar sociologic reasons, I sometimes operate these cases at any age, when the vision in the eye to be operated on has been reduced to finger counting, and in the fellow eye has been practically lost. In these cases combined operation is usually performed, though occasionally preliminary iridectomy followed by extraction. Irrigation, with normal salt solution through a McKeown irrigator is employed, as also the use of dionin to promote resorption of lens débris. These extrac*tions are nearly always followed by the development of secondary* cataract requiring operation, as also inflammatory reaction from the operation. The permanent ultimate vision is always better after the extraction of mature cataract.

L. Webster Fox, Philadelphia: No, I do not extract immature [illegible] not believe in taking the risk of serious [illegible] ch nearly always take place and render [illegible] rable.

[illegible] ids, Mich.: No, as there is a greater lia- [illegible] ions necessitating operative work and [illegible] or.

[illegible] I do not extract immature cataracts if [illegible] the lenses are both about equal I triturate and then extract. In cases where I have extracted lenses slightly immature I have had trouble with the cortex. I avoid this either by waiting or by triturating one of the affected eyes.

George H. Keiper, Lafayette, Ind.: Have had no experience in the extraction of immature cataracts.

DISCUSSION.

Prof. J. Hirschberg, Berlin, said that uveitis, a complication of cataract not mentioned by Dr. Bulson, is very difficult to diagnose, not only in the affected eye, but in the other as well. The views regarding operation on unripe cataract, Professor Hirschberg stated, are poetical but wrong. Physicians are told that the mature cataract is like a pea in a pod, and that when opened it pops out entire, but Professor Hirschberg's experience is that some of the cortex will remain. In unripe cataract he always advises a large opening. If the patient is more than 50 years of age cataract comes out easily. In lamellar cataract in individuals of 30 or 40 he operates without any preparation.

Dr. S. D. Risley, Philadelphia, asked Professor Hirschberg if he would consider it justifiable to operate on a ripe cataract, traumatic or otherwise, with the other eye good, if the patient had to work among machinery, for example, where his life might be endangered because of the blind side, to which Professor Hirschberg replied in the affirmative.

Dr. J. A. Bach, Milwaukee, stated that in his experience in unripe cataracts the removal of the anterior capsule is much to be preferred to the simple tearing or large section. With a good capsular forceps it is a simple matter to remove most of the anterior capsule, and by so doing we are assured of a cleaner result than can be obtained by simple section. The curling up of the anterior capsule is not always so ideal as one could wish, and then again, lens substance often adheres with great tenacity to these curled up portions of the capsule. A gentle washing out of the anterior chamber after removal of the lens is often of great advantage and dislodges particles that otherwise would remain.

Dr. William Campbell Posey, Philadelphia, declared that ever since he has had patients to operate on he has followed Dr. Hirschberg's teachings and removed cataracts as soon as the vision in the good eye fell so low that the patient could not perform the ordinary duties of life, for he could not convince himself from what he had seen in his practice and in that of others, that it was desirable to wait until the lens had become thoroughly ripe before attempting its removal. His results have been equally as good in the removal of immature cataracts as in the removal of mature ones; indeed, he believes that if by waiting until the lens is thoroughly ripe, the cortical substance is more apt to adhere to the capsule and to occasion secondary cataracts and iritis than when the operation is performed in the immature stage. The corneal section must be large and iridectomy should be performed.

Dr. Eugene Smith, Detroit, said in regard to operating on immature cataracts that he believes that there is altogether too much fear on the part of the operators derived from textbook teaching. When the exigencies of the case require it, there is no more objection to operating on a cataract three-fourths ripe than on one fully ripe, and not as much on those overripe. He has been in the habit for years of doing it. The question of removal of the capsule, he said, is interesting, because he always removes the anterior capsule, and for fifteen years he has advocated that procedure. There is less danger from cortical matter and better chance for absorption when the anterior capsule is removed.

Dr. C. R. Holmes, Cincinnati, substantiated what has been said with regard to removal of unripe cataracts. It has been his practice for twelve to thirteen years to remove cataracts when the exigencies of the case demanded it, even if they were only one-half ripe. He has yet to find a single case where he regrets having operated on a partially ripe cataract.

Dr. Albert E. Bulson, Jr., declared his regret that he did not have time to complete the reading of his paper, so that the part dealing with the technic of the operation, including irrigation of the anterior chamber, use of dionin, etc., could enter into the discussion by members of the Section. There is a difference of opinion as to the advisability of operating for immature senile cataract, and the manner in which the operation shall be performed when indicated. Generally speaking, the majority of the ophthalmologists whose opinions were solicited, do not hesitate to operate in these cases, and they report satisfactory results. A few prominent ophthalmologists refuse to operate for immature cataract of any description. Dr. Bulson agreed with Professor Hirschberg that it is difficult to recognize mild uveal disturbance when the lens is clouded sufficiently to make an ophthalmoscopic examination unsatisfactory, and for that reason some poor results are due to the existence of mild pre-existing intraocular disturbances rather than to any ill effects directly associated with the operative procedures. Dr. Bulson confessed that he has learned to expect a certain amount of iritis following the extraction of immature cataract. The inflammatory reaction is undoubtedly due to trauma, more especially that accompanying irrigation of the anterior chamber, but with early and continued use of atropin and dionin he has not had any difficulty in controlling the inflammation. He considers dionin a valuable remedy in the postoperative treatment of cataracts. While the effect of the drug is questionable in some cases, in the majority it has a remarkable effect in promoting resorption of the cortical remains, thus reducing the possibility of necessity of secondary operations.

Educate.—All government by the people is made better when the people come to know and feel its deficiencies. No abuse can survive long when the people have located it. When the masses know what hurts them, that particular wrong must cease.—David Starr Jordan.

A PRELIMINARY REPORT ON CELLS FOUND IN YELLOW FEVER BLOOD, WITH REFERENCE TO THEIR ETIOLOGIC AND DIAGNOSTIC SIGNIFICANCE.

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AND M. COURET.
NEW ORLEANS.

A careful study of yellow fever blood has shown the regular occurrence of certain cells hitherto either unnoticed or not described, which seem to be undergoing developmental changes and which can be demonstrated in the stomach of a recently infected stegomyia. These cells are entirely extracellular, though occasionally some are seen lying on the red cells; on one occasion one was distinctly seen lying within the protoplasm of a polymorpho-neutrophilic leucocyte. They occur, as a rule, alone, though two or more may sometimes be noticed lying indefinitely grouped. They vary in size from twice the diameter of a pneumococcus to one-fourth the diameter of a red cell, and vary in shape from an ovoid to a sphere, and oft times come to a focus in a higher plane than the surrounding red cells. When stained they show, as a class, a highly granular neutrophilic protoplasm surrounding a nucleus which contains one or more deeply staining chromatine granules; the protoplasm is limited by a capsule which is of considerable thickness in the older forms.

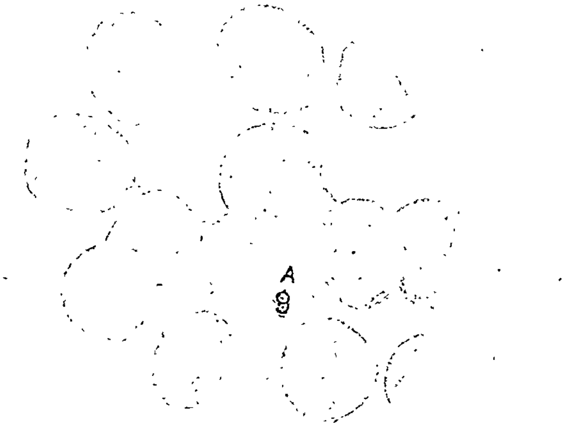

Fig. 1.—Type A, young form, surrounded by a pseudocapsule (1,300 diameters).

The following forms, with minor variations, have been observed:

A. Small, deeply staining neutrophilic bodies about twice the diameter of a pneumococcus and often lying in pairs; sometimes fine chromatin granules can be made out within these; again none can be seen. This form is found chiefly and in greater abundance within the first twelve hours of the disease, and is difficult to detect, as they can be easily confused with various artifacts (Fig. 1).

B. An ovoid or pear-shaped form, with a diameter about one-sixth to one-fourth the diameter of a red cell and a width of about one-third its own length. This has a well-marked nucleus, containing chromatin granules and a narrow rim of neutrophilic protoplasm. This form has been seen in what is taken to be a budding process; again it has been seen in dumb-bell form (Figs. 2 and 3).

C. This has been found in blood taken at any time in the first three days. This form is circular or sphere-shaped and approaches in size that of a microcyte; it has a neutrophilic protoplasm, a definite nucleus always containing several chromatin granules; the whole surrounded by a well-defined capsule (Figs. 4 and 5). It may be mistaken for blood platelets, which it resembles in size, especially when the platelets show much differentiation in staining. But the periphery of the platelets is always slightly wrinkled and irregular—never the case with the cell under description, and in the platelets any granulation which may exist is always found exactly on the periphery and never within the protoplasm.

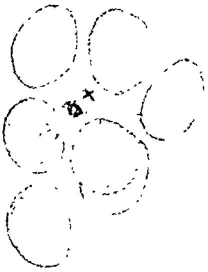

Fig. 2.—Type B. well marked nucleus, chromatin granules, narrow rim of plotoplasm (850 diameters).

D. A large cell which has a definite central nucleus surrounded by a finely granular protoplasm, which at its periphery is indefinitely limited and shows no marked capsule. This form is rare as compared with the previous ones, and is found chiefly on the second and third day (Fig. 6).

The blood has been taken from various parts of the body during the day and night, and from six hours after the onset to the eighth day of the disease. The described cells have only been found after the third day, that is on the fourth, and no relationship could be traced between their frequency and the severity of the disease. Fresh blood, by slide and hanging-drop methods, gave negative results, though on several occasions it was thought that the cells were seen; but there are so many objects in fresh blood which may be mistaken for them that at present this method is very uncertain. The examination of the spinal fluid likewise proved negative. In specimens taken from the same patient at the same time one slide may often be negative, while all the others are positive; this is probably due to the scarcity of the cells in the peripheral blood, for it is unusual to find more than four or five cells to a whole slide even after a three- or four-hour search, and it is exceptional to find as many as twelve in a single slide. It is easy to overlook them and much time has to be given to each specimen before it can be called positive or negative.

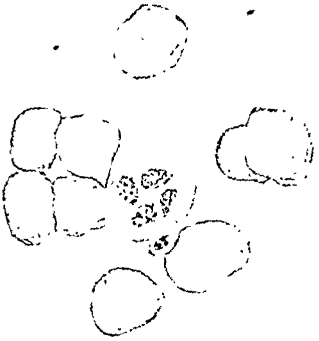

Fig. 3.—Type B, slightly older form than Fig. 2 (900 diameters).

Fifty-two slides of yellow fever blood taken in the first three days were examined, representing thirty-five separate cases. The described bodies were found in all of these save three. Two of these negative slides were duplicates of positive ones, and in the third malarial organisms were found, and clinically the case was indefinite. Many other slides taken on the fourth to the eighth day of the disease, inclusive, were examined with negative results, except once, when the cells were found on the fourth day.

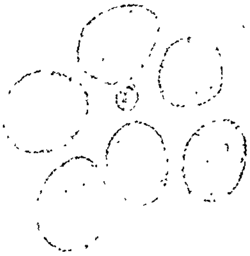

Fig. 4.—Type C, deep staining nucleus, narrow rim of protoplasm surrounded by a definite capsule (850 diameters).

These cells are very poorly and indifferently stained by the usual methods. With Wright's, Erhlich's triacid, eosin and methylene blue, etc., they are but feebly stained and their detection difficult. After trying many stains, the following was found to give almost perfect results: The blood was fixed by immersing the slide in methylic alcohol for two minutes, after which it is air dried. It is next stained with Delafield's hematoxylin for three minutes, acid alcohol till reddish-brown, am-

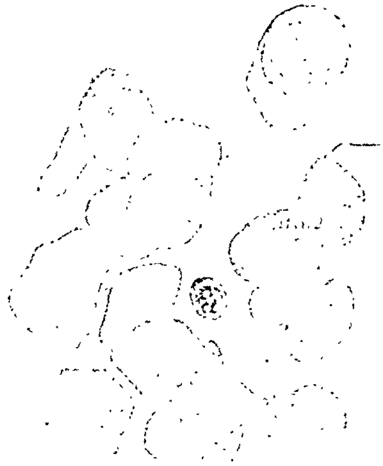

Fig. 5.—Type C (1,300 diameters).

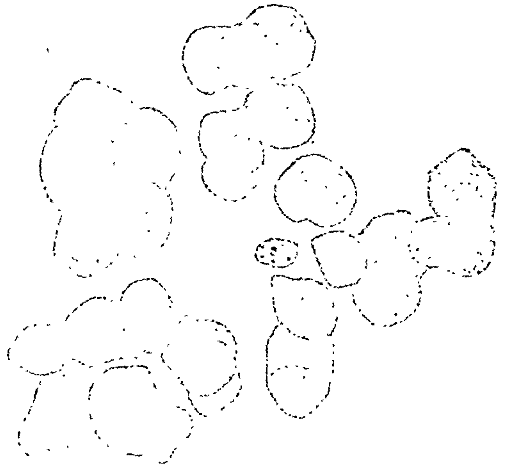

Fig. 6.—Type D (850 diameters).

monia water till blue, wash with water and stain for fifteen minutes with an aqueous solution of eosin. 1/1000, wash and dry and clear with oil of cloves and mount. [illegible] licker method gives almost as good results, viz., after fixing stain with 0.5 per cent. eosin in 50 per cent. alcohol for one minute, wash and stain with Delafield's hematoxylin for three minutes, clear, dry and mount.

With this method the nucleus stains deeply and shows two to four chromatin granules; the protoplasm stains a light bluish-pink and is surrounded by a definite membrane which is more deeply stained. In this well-defined limiting membrane a rather large, deeply stained spot, situated in one pole, can often be made out, often accompanied by several smaller ones.

Every effort has been made in this work to avoid sources of error. The stains have been filtered, sterilized and examined with negative results for similar bodies. The slides and the skin of the patients have been likewise carefully cleaned, and as control 100 specimens of blood have been examined, taken at random from patients in the Charity Hospital. Thirty-five of these were stained by the same technic as that employed for yellow fever blood and most carefully examined with absolutely negative results. The others were stained by all the methods in vogue and with negative results. Four slides from yellow fever cases which were taken in Vera Cruz, Mexico, during the epidemic of 1902, showed the same bodies. Again, seven numbered slides which were submitted to us for examination were correctly diagnosed; four were from yellow fever cases on the second or third day, two from each case and three from other diseases. One yellow fever slide was alone miscalled as negative, but its duplicate was correctly stated to be positive. In several instances plasmodia malaria were found in the blood of patients ill with yellow fever, controverting the opinion that the two infections can not occur together.

Stegomyia raised from the egg and fed on normal humans or bananas and some which were not fed at all, but allowed to bite patients a few days after birth, showed in smears made from blood obtained from the stomach, the same bodies which we have previously described as occurring in the blood of yellow fever patients. In mosquitoes examined later than nine hours after feeding we could not demonstrate these bodies owing to the partial digestion of the blood. Mosquitoes raised at the same time, fed only on normal individuals and examined at the same interval of time showed no such bodies. Results of studies on mosquitoes at later periods of infection will be reported later.

We wish to thank the officers of the Isolation Hospital for the facilities they have given us; also the house surgeon and internes of the Charity Hospital for their interest and aid in following the cases.

Medical Group in Parliament.—The numerous physicians who are members of the French senate or house of deputies, for ten years have been in the habit of meeting apart to discuss measures affecting the public health, etc., before legislating on them. Italy has also a large proportion of medical men in its parliament, and they have recently organized in the same way. In order to become better posted on certain subjects they have issued an appeal for the holding of a special congress of physicians in the state employ, sanitary officials, pharmacists and veterinarians, to confer with the physicians in the legislature in regard to legislative matters. The physicians in the senate style their group the "*fascio medico parliamentare.*"

Special Article

IMMUNITY.

CHAPTER XXVI.

PLAGUE.

Plague was known in the second and third centuries. In the sixth century it ravaged the Roman empire and destroyed half the population in the eastern provinces. Under the name of the "black death" it swept over Europe in 1347-50 with a sacrifice of one-fourth of the inhabitants—about 25,000,000. During the fifteenth and sixteenth centuries many epidemics prevailed in various parts of Europe, and the disease seemed to have fastened itself on that part of the world. It seems, however, that the pneumonic form, the most contagious, gradually became less common, or the virulence of the infection diminished, and this, with the institution of quarantine regulations, decreased the prevalence of the disease during and following the seventeenth century. Nevertheless, there have been occasional outbreaks in Eastern Europe since that time. Since the recrudescence of plague in Hongkong in 1893 and in other places later, the disease has been subjected to modern methods of scientific study, its cause has been discovered, and the importance of rigid quarantine measures at seaports in preventing universal extension of the disease has had practical tests.

Characteristics of the Organism.

In the Hongkong epidemic of 1893-4 Kitasato and Yersin, working independently, discovered the bacillus of plague, *Bacillus pestis.* The organism measures from 1.5 to 1.75 microns in length, 0.5 to 0.7 in breadth, is of long oval shape, typically, but presents many variations in form both in the body and in cultures. It may appear as a short oval (coccus form), or as a longer rod; and distorted and swollen, vacuole-like cells (involution or degeneration forms) are commonly met. The longer the disease has lasted, or, on the other hand, the older the culture, the more numerous are the atypical forms. In bouillon long chains develop. A knowledge of this pleomorphism is important from the standpoint of diagnosis. It is placed with a number of other organisms which cause hemorrhagic septicemias in animals, the members of which comprise the "group of hemorrhagic septicemia."

Polar Staining.

Like some of them, the two ends of the bacillus stain more densely than the central portion with methylene blue, dilute carbol fuchsin and other dyes (polar staining). It does not stain by Gram's method. A capsule may be demonstrated by appropriate technic. The organism has no independent motility and probably possesses no flagellæ. Spores are not formed. It may be cultivated from the blood, organs, bubos, sputum, stools and urine of patients (or animals), on agar, gelatin, bouillon or blood serum which are of neutral or slightly alkaline reaction. On agar in certain respects it resembles the influenza bacillus, and confusion with this organism is possible in cultures made from the sputum. Its appearance on gelatin and bouillon are more or less characteristic. In the latter medium the so-called "stalactite" growth occurs, in which visible processes extend from the surface toward the bottom, where they meet other processes which extend toward the surface ("stalagmites"). These formations utilize as their starting points the sides of a flask or drops of butter or oil which are placed on the surface. Certain other organisms grow in a similar manner.

Involution Forms.

It is said to be a characteristic feature of the plague bacillus that many involution forms appear on agar which contains 3 per cent. of sodium chlorid. The optimum temperature for growth is from 25 to 30 C., which is somewhat lower than that for most pathogenic organisms. It grows rather slowly even under the best conditions. In mixed cultures it is overgrown by more rapidly growing saprophytic organisms (e. g., colon bacillus), although little antagonism exists between them. It may live for from four to seven days in the putrefying organs of man or animals. Its virulence may be retained in the cadaver of a rat for two months (Bandi and Stagnitta-Balistreri). During this time the organisms penetrate all the tissues of the body, even growing through the skin. It may live in the pus of a bubo for twenty days when unmixed with other organisms (Albrecht and Gohn); in the sputum from plague pneumonia for ten days; in various foods, as milk, potatoes, for one to three weeks; in water from five to twenty days, depending on the number of saprophytes which are present; in earth from two weeks to three months, depending on the quantity of organic matter and other organisms. In all these instances the higher the temperature, i. e., above 30 C., and the more numerous the saprophytic organisms, the shorter is the life of the plague bacillus. In winter, when contaminating saprophytes grow less rapidly, the plague bacillus lives longer.

Resistance.

The resistance of the organism to desiccation, sunlight and disinfecting agents is rather low, particularly when the surrounding temperature is above 30 C. In temperatures of from 29 to 31 C., when thoroughly dried, it rarely lives longer than from six to seven days, whereas at lower temperatures, 16 to 20 C., cultures may be obtained after from one to several weeks, depending on the material which contains the organisms. It lives longer in woolen and cotton threads (clothing) than when isolated as in dust; hence, dust infection is improbable (Dieudonné). In sputum (plague pneumonia) and purulent exudates in which the bacilli become incrusted to a degree, life may persist for from three to four weeks. Sunlight kills them in from two to six hours, depending on the temperature and the proximity of the organisms to the surface. Although cultures for the purpose of vaccination have been killed at a temperature of 65 C. for one hour, precautions to insure an even distribution of the heat are necessary to render certain the death of all organisms. 100 C. kills them at once, and 80 C. in from five to ten minutes (moist heat). It is very resistant to cold, remaining alive at a temperature of —20 C. for several weeks, even when repeatedly thawed out during this time. It even proliferates slowly at from 4 to 7 degrees C.

Virulence and Toxins.

Cultures of the plague bacillus retain their virulence over a long period when kept in a cool dark place, and when not allowed to dry. However, they often lose in virulence unaccountably. The nature of the toxic substance is as yet obscure. A concentrated soluble toxin has never been obtained in cultures. Filtrates of young cultures show little or no toxicity, whereas in older cultures the fluid becomes more or less toxic (liberation of endotoxin?). Lustig and Galeotti extract cultures with 0.75 to 1 per cent. potassium hydroxid, from which they precipitate a toxic substance with acetic or hydrochloric acid. Markl found the cell bodies to be very toxic after eight weeks' growth at room temperature, provided the organisms were killed by chloroform rather than by heat; killing by heat destroys the toxic substance largely. He believes some metabolic product of the organs is the chief toxic constituent, claiming at the same time the presence of a certain amount of soluble toxin.

Virulence for Animals.

The plague bacillus is exceedingly virulent for rats, guinea-pigs and monkeys; somewhat less virulent for mice; other animals, cats, dogs, swine, cows, horses, sheep, goats, may be infected artificially, although they commonly recover even after large doses. Rats and guinea-pigs may be infected by subcutaneous, intraperitoneal and intravascular injections, by the feeding of infected material or by placing it on the nasal mucous membrane or in the conjunctival sac, and by inhalation experiments, the last method commonly resulting in plague pneumonia. Guinea-pigs die of plague septicemia in from four to five days when cultures or material containing the organisms (sputum, feces, organs from plague cases), are rubbed into the shaven or even unshaven skin (Albrecht and Gohn). This experiment is of value for the detection of virulent plague bacilli and is a convenient means of separating them from contaminating organisms. Following inoculation into a cutaneous or mucous surface a local reaction of varying intensity develops in which the subcutaneous tissue becomes edematous or even hemorrhagic, in a number of hours the regional lymph glands become swollen and hemorrhagic, and in from two to five days the animals die in a condition of plague septicemia. Cultures of low virulence not infrequently cause a chronic infection which is characterized by the formation of large granulomatous nodules on the surface of the liver and spleen, and in the omentum. Such foci contain many plague bacilli, and the death of the animal results in a few weeks from intoxication or from general infection. Although rabbits are much less susceptible than rats or guinea-pigs, young animals succumb to cutaneous inoculation.

Endemic Plague.

Dieudonné cites four foci in which plague is known to be endemic at the present time: One is in China (province of Yünnan), from which the Hongkong epidemic originated; a second in the Himalayas, which led to the outbreak in Bombay; a third in a mountainous region south of Mecca, and a fourth was found by Koch and Zupitza in British East Africa near the source of the White Nile.

Plague in Rats.

The opinion is held by many that plague is primarily a disease of the rat and that certain regions remain pest-infected over a long period because of this fact. It is known that rats often suffer from a chronic form of the disease, and it is possible that the organism at times acquires increased virulence, as a consequence of which the infection becomes widespread and rapidly fatal among these animals. It is probable that the chief method of transmission from rat to rat is through the eating of plague cadavers by healthy animals. The possibility of transmission from one animal to another by means of fleas is upheld by some. It has been shown that the blood which they ingest from an infected animal may contain bacilli, but transmission to other animals by this means is still disputed.

Plague Houses.

The means by which the disease extends from rat to man are not definitely determined. This much is known, however: First, that the bacilli are excreted in the urine and feces of infected animals; and, second, that the disease attacks those especially who live in dark, damp, filthy quarters in which rats are numerous. A great mortality among the rats not uncommonly precedes an outbreak of plague in man. Europeans who live under hygienic conditions in plague infected districts do not often contract the disease. It is suspected that the existence of "plague houses" may depend on the prevalence of the disease among the rats, which infest the houses. On the other hand, the organisms excreted by a plague patient through the sputum, urine or feces, find in the conditions described above, surroundings which favor their prolonged life; hence, the occurrence of subsequent infection in the same house in many instances may be traceable to a previous case.

Fleas.

The theory has been advanced also that fleas may be an important means of transferring plague from rats to man. This is objected to on the ground that every animal has its own peculiar flea and that the flea of the rat will not bite man. Nevertheless, it may alight on the skin of man temporarily and there discharge bacillus-laden excretions. Flies in a like manner may distribute the bacilli from rats or the infected excretions of man.

Epidemics.

Epidemics of plague lack the explosive-like suddenness in their development which characterizes cholera and to a certain extent typhoid and dysentery. The cases occur in groups and in particular houses in such a manner that direct and indirect contact seems to be largely responsible for its extension. Every epidemic of plague may be divided into three stages: a slow progression from small centers, an acme of widespread death, and a slow recession (Dieudonné). It seems probable that the disease spreads rapidly and extensively only when the pneumonic form prevails. In this instance infection by direct contact may occur through the inhalation of dried sputum or of infected drops of sputum or saliva directly from the patient. Even in ordinary speaking minute drops of saliva are thrown into the air. In the pneumonic and septicemic forms, the infected urine and feces contribute to the dissemination of the organisms. Transmission by indirect contact, as by infected clothing and linen, has been noted in many instances. Compared with pneumonic and septicemic plague the bubonic form is much less dangerous to a community.

When plague invades a new country it commonly makes its first appearance in coast cities. Presumably this is accomplished through infected rats which may board a ship during its stay in a pest-ridden harbor, and which subsequently escape at the new port.

Infection Atria.

In man infection takes place through the skin most frequently, although the mucous membrane of the mouth, nose, pharynx, tonsils or the conjunctiva are possible infection atria. Often no local reaction is produced, and the point of entrance may be indicated only in a general way by the swollen lymph glands of the region. Infrequently a pustule or small carbuncle marks the point of entrance. Primary plague pneumonia is caused by the inhalation of pest-laden material, particularly fine particles of sputum from a pneumonic case, and perhaps also by the inhalation of infected dust; the latter is probably of less importance because of the short life of the organism in dust. Infection is thought not to occur through the stomach or intestines.

The incubation period is commonly from three to five, and not longer than ten days.

Following cutaneous infection the regional lymph glands become swollen and hemorrhagic, and undergo more or less extensive necrosis. When the infection extends beyond the lymph gland the blood may contain enormous quantities of bacilli (plague septicemia), and the same condition follows plague pneumonia; in the event of general infection death follows in a few hours. "Secondary pneumonia" and also "secondary buboes" develop as a consequence of blood infection. Hemorrhages into the mucous membrane (especially the stomach or cecum), endothelial surfaces (pericardium), and various parenchymatous organs, with extreme degeneration of the latter (liver, kidneys and heart), are characteristic anatomic changes. The spleen is usually swollen. The toxic substance evidently has affinities for many tissues.

Mixed infection with the streptococcus is not uncommon and is a serious complication.

Prophylaxis.

The principles of prophylaxis rest: 1, In an early bacteriologic diagnosis by microscopic and cultural examination of blood, sputum and fluid taken from a bubo either by a syringe or after incision; 2, in the thorough isolation of patients and of those who have been exposed to infection; 3, in the disinfection of excretions, of clothing and of infected houses, which in some instances may mean the destruction of the latter; 4, in the destruction of rats; 5, prophylactic injections. Up to the present time the most effective measure of getting rid of rats is to offer a bounty for each animal caught.

Vaccines.

The vaccine of Haffkine has been used extensively in India. The Indian plague commission found that the incidence of disease and mortality were lower among the inoculated than the uninoculated, although many of the inoculated contracted the disease in a comparatively benign form. The vaccine consists of bouillon cultures which have grown for six weeks with stalactite formation (see above), then killed by exposure to a temperature of 65 C. for one hour; from 0.5 to 3.5 c.c. are injected, according to the age and size of the individual. One or more subsequent injections may be given. The local and general reactions are of moderate severity. Protection becomes manifest only several days after the inoculation and may persist for many weeks or months. The vaccine recommended by the German commission consists of two days' old agar cultures which have been killed by heat (65 C. for one hour). Lustig and Galeotti utilize the toxic precipitate described above as a vaccine. Terni and Bandi inoculate rabbits or guinea-pigs intraperitoneally with the plague bacillus and after or just preceding death collect the peritoneal exudate, in which the organisms are allowed to proliferate still further for twelve hours. The bacilli are then killed at a low temperature, and this fluid, after an addition of a preservative, constitutes their vaccine. Although the last three vaccines have proved of value in animal experiments, they have not as yet been used extensively in man.

Besredka, also Shiga, recommend the use of mixed active and passive immunization, already referred to under typhoid and cholera, in this instance naturally using plague bacilli (killed) and anti-plague serum. Shiga reported good results by the use of the combined method in the epidemic in Kobe.

Immunity.

The immunity which is produced by protective inoculation, like that which follows natural infection, is considered to be antibacterial inasmuch as the serum acquires increased bactericidal power for the bacillus, but shows no ability to neutralize its toxic constituents. As in relation to many other infections, however, we are not in position to ignore the possibility of an increased phagocytic power on the part of the leucocytes. The immunity which follows infection is of long duration.

Serumtherapy and Prophylaxis.

Prophylactic injections of antiplague serum produce a temporary immunity of about two weeks' duration. The Pasteur Institute prepares the serum of Yersin by immunizing horses first with killed and then with living cultures. The immunization is difficult and from several months to a year and a half are required for the production of a strong serum. When the blood is drawn eventually its freedom from living plague bacilli and from toxic substances must be assured. The immunizing value of the serum is determined by that quantity which will save a mouse from a fatal dose of living plague bacilli, the serum being given twenty-four hours in advance of the culture. This is accomplished by 0.1 to 0.02 c.c., depending on the strength of the serum. Its curative power is estimated from that quantity, 0.5 to 0.1 c.c., which saves a mouse when administered sixteen hours after the injection of an otherwise fatal dose of culture. For protective inoculation in man from 10 to 20 c.c. are recommended, and for curative purposes from 30 to 50 c.c. Concerning the value of this serum Dieudonné concludes as follows: "On the basis of the results obtained in man and in animal experiments we can attribute no positive curative value to the Parisian serum, although a certain influence on the course of the disease can not be denied. On the other hand, the serum is suitable for protective inoculation when immediate immunity is necessary, as for those who are caring for cases of plague pneumonia. Since, however, the protection afforded by this means persists only for a few days, subsequent active immunization with killed cultures is indicated as soon as possible for those persons who are exposed to infection for some time." The favorable results noted by a number of observers would seem to justify further use of the serum for curative purposes.

The serum of Tavel, prepared at the Institute of Bern, is, like that of Yersin, bactericidal and agglutinating. Antitoxic as well as bactericidal properties are claimed for the serum of Lustig, which is prepared by immunization with the toxic precipitate mentioned above. It has been used extensively in the treatment of plague and in a number of small epidemics favorable though not thoroughly convincing results were reported. The serum of Markl, which is supposed to be antitoxic, has had no practical trial. It is prepared by immunization with old cultures which have been killed by chloroform.

Agglutination.

Although the serum of patients acquires a certain agglutinating power, it is rather low (1/3 or 1/5), and does not become manifest until during the second week of the disease. Before this time diagnosis by clinical or bacteriologic means can be made with certainty, hence for clinical diagnosis the reaction has little value. On the other hand, a strong artificial agglutinating serum obtained by the specific immunization of animals is of great value for the identification of the plague bacillus when cultures have been obtained from suspected cases. Artificial serums may agglutinate in dilutions of from 1/1000 to 1/6000.

The protective power of vaccination was strikingly shown in the case of a nursing mother who contracted confluent smallpox; she was taken to the hospital with her seven months' baby. The infant had been successfully vaccinated fourteen days previously; it was not weaned, but was nursed by the mother throughout her illness, and was handled daily by about fifty other patients in various stages of smallpox; it left the hospital in perfect health.—H. J. Neilson, in *Brit. Med. Jour.*

Clinical Notes

AN UNUSUAL GONORRHEAL COMPLICATION.

JAMES A. NYDEGGER, M.D.
United States Public Health and Marine-Hospital Service,

Patient.—A young Swede, aged 21, of fair habits, who could not recall having ever before been ill, was admitted to the Marine Hospital, New York, June 14, 1905, with the following history:

History.—Having arrived in port after a somewhat prolonged voyage, he, in company with a number of his shipmates, visited numerous sailors' brothels in lower New York. The result was that a few days later he developed gonorrhea. There was a discharge from the meatus, and a short time after the discharge appeared he noticed a soreness in the right groin, on account of which he applied for relief.

Examination.—This showed, in addition to the discharge, a slight enlargement and tenderness of one or two of the superficial inguinal glands on the right side. Temperature and pulse were normal.

Treatment.—Rest in bed, a restricted diet, alkalines administered internally, an ice bag applied over the tender glands and a 1 to 4,000 solution of permanganate of potassium for irrigation of the anterior urethra were prescribed.

Result.—His discharge ceased in about a week, and the pain and swelling of the lymphatic glands almost subsided. The patient was able to be about in the ward. The urethral irrigation was continued.

Subsequent History.—On June 25, following a feeling of chilliness, there was elevation of temperature, and on June 26 the temperature went up to 39.8 c.; pulse was 84. He complained of chilly sensations at intervals. Irrigations were discontinued, and cold sponges were ordered to reduce temperature. The temperature took a downward course for three days, but did not reach normal.

On June 29 a tumor mass the size of a small hen's egg was made out above Poupart's ligament almost at the ilium. The tumor was painful on pressure, and it continued to increase in size. The mass could be fairly well palpated on deep pressure. There was doubt as to its nature and more doubt as to its exact location, whether it was intraperitoneal or extraperitoneal.

Blood Examination: This showed a leucocytosis of 16,300, and a differential count (500 cells) gave 75.5 per cent. polymorphonuclear cells. The temperature curve indicated also a rather severe infection.

Operation.—Under ether, an incision was made about an inch above and parallel to Poupart's ligament. It was about four inches in length, and extended well out over the anterior superior spine of the ilium. The peritoneum was reached, and being adherent to the mass, was pushed upward and backward with some difficulty. Following back between the mass and the peritoneum carefully, the mass was found to consist of a number of lymphatic glands closely surrounding the external iliac vein and artery, and bound together by their surrounding inflammatory tissues. The glands contained many foci of suppuration.

Owing to the depth of the involved glands and to their close connection with the large blood vessels, they were not wholly removed, for fear of wounding the vessels. A blunt-pointed probe was pushed into the glands in many directions, and subsequently they were broken down by the fingers and partially removed. The wound was packed with plain sterile gauze and left open. The portion of the glands left behind at the time of the operation and adherent to the vessels, subsequently sloughed away gradually, and the wound healed by granulation. The patient was discharged in early August.

Remarks.—The case is reported because of the apparent great rarity of such complication occurring in the course of an attack of gonorrhea. There was reasonable doubt before the operation as to the nature of the mass; there was also more doubt as to its location. It was difficult to say whether it was inside the abdominal cavity or outside the peritoneum, owing to its close proximity to that membrane. In its growth the mass had pushed that part of the peritoneum extending over it, upward. The necessity for the operation was indicated by the septic pulse curve, the degree of leucocytosis and the high percentage of polymorphonuclear cells in the blood. With a suppuration due to a highly virulent organism in the lymph glands surrounding the iliac vessels, there is considerable danger of rupture of the glands through the peritoneum into the general abdominal cavity, with a resulting peritonitis.

Dr. C. H. Lavinder of the Public Health and Marine-Hospital Service, in whose ward the case developed, first called my attention to it in consultation. The case was seen together a number of times and the opinions were divergent. Of course, there was always borne in mind the probable cause for the occurrence of the tumor.

In a rather extensive search of the literature of gonorrhea and its complications, I have been unable to find a single reference to a complication of this nature occurring in this location. I assume, therefore, that it is of rare occurrence. A glandular involvement of lymphatics of any nature in the course of a gonorrhea in the male is of rather infrequent occurrence, and then the superficial inguinal glands are the ones involved. Doubtless in the course of a gonorrhea other pus-producing organisms than the gonococci gain access to the lymph glands supplied from the genitalia, although these latter are capable of exciting violent inflammation. No other organisms were looked for in this case.

A CLINICAL CHART FOR THE RECORDS OF PATIENTS IN SMALL HOSPITALS.*

GEORGE F. WILSON, M.D.,
PORTLAND, OREGON.

In very many of the smaller hospitals throughout our country, a great deal of good work is done, and there is no question but that a careful record of this would prove useful, instructive and of benefit to science if it could only be observed in an accessible form.

Aside from the strictly scientific aspect of the matter, reference to the progress of a patient during a sojourn in a hospital becomes frequently important in a legal way, as a means of substantiating or refuting claims for damages, and as a groundwork on which an expert witness may base an opinion. Witness for instance the case of an individual with marked asymmetry of the chest wall. who claimed that his existing disability was largely due to his having his ribs crushed in a railroad train wreck. His hospital record showed no variations in pulse, respiration or temperature during the nineteen days immediately following the accident, yet had the case not been settled out of court, there were witnesses ready to swear that the deformity was not present before, and therefore must have been caused by the accident. In many such ways can the value of a careful record be shown.

Owing, however, to the small clerical force and the manifold duties of the resident staff in our smaller hospitals, but little time can be found for copying histories, even though they are taken carefully. The work is not instructive, or interesting to a student of medicine, and as I know, from my own personal experience, will be neglected if there is any possible way to do so. Excuses will always be found, or made, to shirk the work, consequently, unless such records can first of all be made in the simplest possible shape and afterward be preserved in the original form, they will be lost forever. A hospital, like any business, must keep a system of books, making a certain amount of clerical work a necessity, and after the admission of a patient, as a part of the business of the institution, there must be a method of showing what changes of rates are brought about by a transfer from ward to room, or vice versa, and what expense has been incurred in the way of operation, etc.

With the view of avoiding any repetition and simplifying the work as far as possible, to each patient, on admission, is allotted both a card and this chart on which are blank spaces for his number, name, date of admission, address, age, civil condition and occupation, religion and nativity, also the number of his room or ward, with the additional information on the card as to page of ledger, address of nearest relative, name of his physician, name of order or fraternity of which he is a member, and name of individual or corporation responsible for him. The card is kept at the office for the business part of the transaction, becoming, if deemed proper, an index to his chart when filed away, and an index to his ledger account. The chart is given to the nurse in charge of the patient. On the obverse of the sheet, immediately beneath the so-called pedigree, is a space for the diagnosis and name of attending physician or surgeon. Beneath this is recorded, under separate headings, any operation performed, with its date, the name of operator and assistant, the kind of anesthetic, total time, amount for narcosis, and total amount, and name of anesthetist, the kind of sutures, both *deep and superficial*, date of their removal, use of drainage and results as to infection. Below this, under the headlines, "Family History," "Previous History," "Present History," and "Examination," are spaces for recording these facts. Sufficient space to the right of this is reserved, under separate headings, for the results of blood examination and urinalysis. Near the lower margin are the results as to cure, improvement or not, with date of discharge or death. On the reverse side, under the caption "Bedside Notes," the sheet is so ruled as to give a space for a morning and evening record of pulse, respiration and temperature, a daily record of bowel and bladder function, diet, *treatment*, and remarks on the progress of the case. A sufficient margin is preserved on both sides for binding in book form, or with perforations to form a portfolio. Under bedside notes, one sheet will accommodate a stay in hospital of about one month: should, however, the sojourn be prolonged, additional sheets of these notes, with both sides alike, are provided for a continuation of the history, all being bound together when finished.

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* Read in the Section on Surgery and Anatomy of the American Medical Association, at the Fifty-sixth Annual Session, July, 1905.

GOOD SAMARITAN HOSPITAL.
CLINICAL HISTORY.

No. . . . . Name . . . . Admitted . . . .
Address . . . . Age . . . . Civil Condition . . . .
Occupation . . . . Religion . . . . Nativity . . . .
Room No. . . Ward No. . . Transferred to . . . . Date . . . . .
Diagnosis . . . . Dr. . . . .

Operations . . . .
Date . . . . Operator . . . . Assistant . . . .
Anesthetic . . .(Total time) . . Amount (for Narcosis) . . . (Total) . . .
Anesthetizer . . . . . . Sutures (deep) . . . . . . (Superficial) . . . . . .
Drainage . . . . . . Sutures removed . . . . Infection . . . .

Family History
Previous History
Present History
Examination

BLOOD EXAMINATION
Hemoglob %
Whites No.
Reds No.
Stained Prep.

URINALYSIS
Reaction.
Spec. Grav.
Albumin
Sugar
Phosphates
Urates
Crystals
Blood
Pus
Casts

Results: . . . Cured. . . . Improved. . . . Unimproved. . . . Died. . .
Discharged. . . . .

[*The top of the* reverse side is as follows:]

BEDSIDE NOTES.

Name Room No. Ward No.

Date	Hour	Temp.	Pulse	Resp.	Urine	Stools	Treatment	Diet	Rem'ks.

[The remainder of this page of the chart is ruled off in columns under the above headings.]

It becomes the duty of the nurse in charge to fill in the bedside notes, to copy, from slips furnished by a member of the house staff, the results of the urine and blood examinations, to fill in the space recording any operation and its results; furnishing to the office, on a slip provided for the purpose, the nature of the operation that proper charge be made, also the record of any transfer from ward to room, etc. To a member of the house staff is allotted the duty of taking the history of the individual directly on the chart.

When the case is finished, the chart is returned to the office and the attending physician or surgeon is asked to enter the diagnosis and append his signature.

The chart is put away and the card which was furnished the clerk, filed in card form, as an index of the patient's name and number, or an index may be kept in a book provided for the purpose, together with another of the disease, so that either may readily be referred to.

The accompanying reproduction of the chart shows the wording, but not the space. The chart itself is 11 by 15 inches. While not claiming that either the chart or the methods employed are in any manner perfect, they are offered as a means of bringing some order out of chaos, and for suggestions as to improvements.

DISCUSSION.

Dr. E. S. Wright, Salt Lake City, said that the size of the chart is a matter of some importance in handling and one to which he would find some objection. If only that part of the sheet were used below the lower line it seems to him that it would be better. He has used a form of chart similar in width and length for recording in a private hospital. The space for diet needs to be enlarged while that for remarks may be lessened. It is a very essential matter to specialize in the dietary. These are the objections he would offer to the use of such a large sheet. He prefers to take the material on the side giving clinical history, and an independent piece of paper, say a blue print containing the clinical history, having the two uniform in size.

Dr. Harry M. Sherman, San Francisco, said that the principal objection in his mind is the fact that in these records one has to write on both sides of the sheet, and he thinks this will prove to be a very decided drawback, as it is customary when papers have to be filed together that only one side should be used. Apparently the history is not kept by the chief, but by an assistant. Dr. Sherman finds it useful to have kept with the records of each case a special sheet which is his and on which he can jot down observations himself. This always stays with the history and is bound up with it, so that when he goes back over the records of cases he can find his own individual expressions of opinion, which are much more intelligible to him than those put down by others. This sheet is of a separate color and he considers this a practical point. Another objection is having the space so ruled as only to allow a certain amount of space under each heading. Some things can not be kept in a given space, and a patient's condition may call for space which should be limited only by its own needs. He considers that in this respect the chart is a little too mechanical.

Dr. G. A. Wilson declared that Dr. Wright's objections are good. These charts are not kept at the patient's bedside, but in a separate room, and the top of the chart is grasped by a clip. The difficulty of writing on either side is important, and a great objection is that the house surgeon, when taking the history of the case, often soils the sheet. Dr. Wilson said that Dr. Sherman evidently must have reformed, as they were in Bellevue Hospital together and he used to have an old convalescent take his histories for him, but now, apparently, he takes them himself. Dr. Wilson said that he did not present the chart as a perfect specimen, but only to get suggestions. He has often been annoyed and embarrassed when he wanted a history and it could not be found.

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THE INDIVIDUAL AS A FACTOR IN INFECTIOUS DISEASES.

One of the characteristics of medical opinion which can be traced through the literature of all ages is its tendency to run to extremes. From a period of excessive bleeding and purging we react to a period of practically no bleeding and mild purging, and instances of a similar character could be multiplied indefinitely. Sometimes the complete abandonment of an old method or idea is due to discoveries which indicate its fallacies; more often the change is due to the influence of some one man or group of men who change the fashion, for there are fashions in medicine as well as in spring bonnets. Again, a medical theory may be so attractive and so plausible from certain points of view that, for the time being, it hypnotizes us into forgetting or minimizing the other points of view. A recent article of Ewing[1] suggests that we have been so hypnotizing ourselves with certain aspects of the bacterial theory of infectious diseases.

In bacterial infections, what we call the disease is the expression in symptoms and signs of a struggle which is taking place between the invading bacterium and the invaded individual. The general tendency of the profession, ever since bacterial diseases came into prominence in the last quarter of the preceding century, has been to lay too much stress on the rôle of the parasite, and too little on the rôle of the host, in analyzing the factors producing the disease. This tendency, though widespread, has not been universal, for there have always been those who championed the cause of the individual. We remember, for example, that Maurice Letulle, in his classical work on inflammation, suggested that we should speak of pyogenic individuals rather than pyogenic cocci.

It is in the class of infections represented by typhoid fever that we find the greatest difficulty in explaining all the changes from the point of view of bacterial action alone. The typhoid bacillus typifies a class of bacteria to which most pathogens belong, and in which the disease-producing toxins are not excreted as in diphtheria, but are set free only when the enclosing cell is damaged. Thus in typhoid fever we see at an early stage of the disease a bacteriemia, but as the disease progresses, even in unfavorable cases, the bacteria gradually disappear from the blood, and in favorable cases the disappearance is complete. In the production of immunity from diseases of this class this destruction of the causal bacteria is all-important, for it is found that immunity can not be produced by the injection of filtrates of the cultures, but that the bacterial cells must be introduced also. During the destruction of the bacteria, certain poisonous products are set free, and, though we know but little of their composition in many instances, enough has been discovered to lead one to surmise their nature and effects. Vaughan has expressed the opinion that the bacterial cell is a chemical compound of definite composition. From the colon bacillus he has isolated a variety of chemical groups, among which nuclein, amido and carbohydrate groups are most important. These substances exert an intensely irritating local reaction, and evidently produce a cumulative poisonous effect on the body cells, as apparently no real immunity to them is developed. It seems probable that, like other poisonous proteids which do not cause immunity, they must be disposed of by oxidation. During this process, and before they are completely destroyed, they may seriously injure certain organs engaged in their destruction, especially the liver, in which histologic evidence of severe damage is generally to be made out. In typhoid fever, then, taking this as an example, the bacilli not only produce toxins which can be immunized by antitoxins, but also other poisons which have a cumulative action, and which must be *destroyed by oxidation* more or less at the expense of certain internal organs. There is evidence that the changes excited in the body cells by the cumulative toxins result in serious disturbances in the metabolism of typhoid patients which lead to a condition closely resembling at times acute yellow atrophy of the liver. Once started, these degenerative processes seem, to a certain extent, to be self-perpetuating. According to this conception typhoid fever does not represent merely a specific bacterial intoxication, but shows in addition to this the effects of a peculiar, self-perpetuating autointoxication. The bacterial toxemia is the predominating factor early in the disease, while the autointoxication plays the leading part in the later stages. It is possible, by accepting this hypothesis, to understand why it is that different individuals with apparently the same degree of typhoid infection react in the end so differently. It shows us that in this and many other bacterial diseases we must reckon much more with the rôle played by the individual than we have in the past.

PHYSICAL CHEMISTRY APPLIED TO THE PHENOMENON OF AGGLUTINATION.

Every one is familiar with the phenomenon of agglutination from the point of view of a diagnostician. When blood or serum from a typhoid patient, for instance, is added in the proportion of 1:50 to a uniform suspension of typhoid bacilli, the bacteria clump together and fall to the bottom of the vessel. The explanation of this clumping has been made the subject of a large number of investigations and many interesting results have recently been presented. In the light of these studies, the phenomenon may be divided into two phases: (1) The union of agglutinin with the bacteria, and (2) the clumping and precipitation of the bacteria thus treated, which may be called "agglutinin-bacteria." Agglutinin-bacteria which have been washed in sterile distilled water and resuspended in distilled water do not undergo spontaneous agglutination as long as no salts of any kind are present in the suspension. The addition of salts, as, for example, NaCl or $CaCl_2$, even in small quantities, produces agglutination.

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[1] Proc. of the Pathol. Soc. of Philadelphia, vol. viii, No. 3.

The first phase of the phenomenon of agglutination, i. e., the union of agglutinin with bacteria, is probably represented by a chemical reaction which results in the formation of a more or less stable compound, agglutinin-bacteria. Very little, however, is as yet known about the nature of this reaction. The second stage, that is, the clumping of the bacteria, has been likened by Bordet to the precipitation of colloidal solutions (as of $As_2 S_3$) and emulsions of unorganized substances (as of mastic or kaolin) by salts and acids. The particles in a colloidal solution and in an emulsion, and also the bacteria in a suspension of such, are charged with electricity which is shown by the fact that they migrate toward one of the poles of the battery when a current of electricity is passed through the colloid or emulsion. Bacteria in suspension, and also many colloids and emulsions, usually have a negative charge and hence migrate toward the positive pole (anode). It has been found, now, that such colloids and suspensions of bacteria are precipitated, or agglutinated, very similarly by the same salts, and that the laws governing the precipitation of colloids also govern the agglutination of bacteria.[1] Thus the power of a salt to produce precipitation of colloids, or agglutination of bacteria, is dependent on (1) the degree of its electrolytic dissociation, (2) the valency of the cation (the basic radical of the dissociated salt), (3) the speed of migration of the cation, and (4) its decomposition tension.[2] The higher the valency of the cation and the lower its decomposition tension the greater, in general, is its power to precipitate colloids and bacterial suspensions. H ions form a striking exception to this rule, presumably on account of their high speed of migration. Sodium, for instance, has a high decomposition tension and its valency is low, and in agreement with this it has been found that its salt, NaCl, precipitates colloids only when used in high concentrations, and does not agglutinate bacteria at all, unless they have previously been acted on by agglutinin. That is, agglutinin-bacteria are more susceptible to the action of NaCl than untreated bacteria. On the other hand, salts of metals with a high valency and a low decomposition tension, as $Al_2 (SO_4)_3$, precipitate untreated bacteria when only small quantities of the salt are added. The greater susceptibility of agglutinin-bacteria to the influence of the salt is a general law. All salts clump agglutinin-bacteria more readily than the untreated organisms. This fact necessitates a revision of the old conception of the rôle of agglutinin. Apparently, agglutination of bacteria is always produced by the salts in solution and not by the agglutinin. The latter serves only to render the bacteria more susceptible to the influence of the salts. In agreement with this it has been found that agglutinin-bacteria have a smaller charge of negative electricity than untreated bacteria. This is an important fact, because the agglutination by salts seems to be due to the fact that they discharge the electricity resting on the bacteria. Just how that discharge is brought about is still an open question. Billitzer[3] is of the opinion that the cation of the salt, being positively charged, attracts many bacteria, or particles of a colloid, which results in a neutralization of their charges of electricity with the simultaneous formation of a clump which falls out of suspension.

This view explains the facts very beautifully, although it would be premature to say whether or not it is the correct explanation. We can now understand, however, why a trivalent cation is more effective in producing agglutination than a bivalent one. The former has a greater charge of positive electricity than the latter and hence can neutralize the electricity of opposite sign on a larger number of bacteria. Similarly the greater ease with which agglutinin-bacteria are clumped by salts than untreated bacteria is due to the smallness of their electrical charge which is readily neutralized by the cations of even traces of salts.

AMERICAN SANITARY ACHIEVEMENTS.

In the discussions on papers on tropical diseases before the Section on Practice of Medicine, at the recent session of the Association, particular attention was called to the amount of work which has been accomplished by American sanitarians in the various tropical countries that came under the domination of our government at the time of the Spanish-American war. Cuba has been entirely freed from the scourge of yellow fever, which had existed there for four centuries and was considered to be so firmly rooted in the country that its eradication was thought to be hopeless. In Porto Rico, the characteristic anemia, which for at least a century has been sapping the life and energy of the people, has been studied as never before, its true cause recognized, and the proper treatment for it evolved, so that now there is a prospect that before many years have passed this evil, too, will be eradicated. Particular attention was called to the work of Drs. Ashford and King,[1] who have been engaged in a field campaign against uncinariasis in Porto Rico for several years and who have the best hope of success in wiping it out. This will be the first time in the history of medicine that a disease affecting practically a whole people and easily transmissible has been successfully combated.

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[1] Neisser and Wechsberg, Münch. med. Wochft., 1904: Bechhold, Zeitschr. f. phys. Chemie, vol. 48.

[2] The term "decomposition tension" refers to the electrical tension which must exist on the electrodes to deposit the metal from aqueous solutions of its salts. It is a measure of the affinity of the metal for its electrical charge.

[3] Sitzungsber. d. Kais. Akad d. Wiss. in Wien, vol. cxiii, p. 1159.

[1] THE JOURNAL A. M. A., Feb. 11, 1905, p. 478.

The straightforward, enterprising methods of American medical investigators recall so typically what has been accomplished in all lines of work by our countrymen that we can scarcely fail to be especially proud of their success. If the Spanish-American war brought no other benefits in its train than those of the saving of life and suffering from yellow fever in Cuba and from uncinariasis in Porto Rico, it would have been well worth the cost of men and money it occasioned. As a matter of fact, however, the benefits conferred on acquired territory have been reflected *in the sanitation of* our own states. The compensation that always comes to the charity worker in benefit to himself has not been lacking in this national charity. While the anemia of Porto Rico was considered to be specific to the island, the discovery of its intestinal parasitic cause has led to more careful observations with regard to the etiology of obscure anemic conditions, especially among children in our southern states and the consequent discovery of the same parasite there.

What has been accomplished in advance in knowledge with regard to the distribution of this parasite and the mode of infection in the South shows the same enterprising spirit present among the medical investigators in that part of the country and makes an encouraging prospect for the future of medical progress all over the United States. Dr. Claude Smith's[2] investigations apparently confirm the assumption that these intestinal parasites gain an entrance into the body through the skin, and that it is the habit of going barefoot that causes infection and reinfection until large numbers of parasites may gather on the intestinal mucous membrane.

The work which has been accomplished in Cuba and in Porto Rico is only an introduction to the success of American sanitation in the Philippine Islands. Dr. Musgrave's paper,[3] presented to the Section on Practice of Medicine at this session of the American Medical Association, shows that the mysterious problems of amebic dysentery which have been so long under discussion are gradually nearing their solution as the result of careful investigation. Not only have the doubts about the etiology been cleared up, but the fact that a long latent period at the beginning of the disease frequently occurs, and that this may be followed by severe and even fatal infection, with fulminant symptoms lasting only a few days, shows the danger of the disease and the necessity for microscopic investigation for its diagnosis. There is, perhaps, no original work on intestinal parasites of recent years of more value than these studies of amebic dysentery.

Recently the lay press of the country has indulged in frequent expressions of discouragement with regard to the possibility of American medical science managing successfully the inevitable sanitary problems in the construction of the Panama canal. If those who are distrustfully pessimistic will but recall what has been accomplished in the last few years, apparently in the face of insuperable difficulties, a more hopeful spirit will very soon result.

If, with the comparatively inadequate resources and men of the Marine-Hospital Service and other sanitary bureaus so much has been accomplished in the recent past, it is easy to understand how much might be done if abundant opportunities were afforded and resources were only limited by the judgment, not of politicians, but of expert sanitarians.

MASTICATION AND CHILDREN'S HEALTH.

Two pathologic conditions are observed with increasing frequency among the children of this generation after the age of 2 years. They are an enlargement of the cervical glands, as well as of the adenoid tissue within the pharynx, and the occurrence of carious teeth. Among the school children of our large cities, according to medical school inspectors, about one in five, at least, will be found to have glandular enlargements in the cervical region, either anteriorly or posteriorly. Something more than one in ten will be found to be a mouth-breather, because of overgrowth of the adenoid tissue at the back of the mouth. Nearly one in four will be found to be suffering from marked deterioration of the teeth that causes interference with mastication and at the same time proves a fruitful culture medium for micro-organisms of various kinds which are sure to do harm in the lower digestive tract. Recent discussions among dentists call attention to the fact that to a noteworthy extent all of these pathologic conditions in and around the mouths of children may be traced to certain bad habits in the matter of feeding that have been introduced in recent years.

It is the present custom to advise that children shall be fed almost entirely during the second and third years on soft food that is practically liquid in character. Eggs are especially recommended, though milk still constitutes the basis of the diet. Breadstuffs are taken usually after having been soaked or, if not, care is exercised in furnishing the children only with the softer portions of bread. Very few children fail to like crusts if they are tempted to eat them when first allowed starchy materials, but after a time it is rather a difficult matter to tempt them to eat the harder portions of bread at all. Puddings that are given to children are, of course, all soft, and, as meat is practically tabooed, the children's teeth have no proper exercise of the function for which they exist, and without function no organ in the body develops properly or remains long in a normal healthy condition.

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[2] The Journal A. M. A., Aug. 27, 1904, p. 592.
[3] The Journal A. M. A., Sept. 16, 1905.

It was very evidently Nature's intention that some chewing should be done almost as soon as the teeth begin to appear. The child erupts its incisor teeth just about the time that the decreasing milk supply in the mother suggests the necessity for additions of some kind to its diet. After the appearance of upper and lower incisor teeth, suckling usually becomes increasingly difficult, because the child's tendency to chew at something makes the operation uncomfortable for the mother. As pointed out by Dr. J. Sim Wallace,[1] this used to be the signal in past generations for the provision of various materials that needed to be masticated before they could be swallowed. After all, the habit of keeping cows is comparatively modern, and the children of the generations before that of the cow-keeping time had to be supplied with food without this precious adjunct to the child's dietary, which now, it would seem, is likely to be abused because of the readiness with which it can be obtained.

The child's gastrointestinal organs have accommodated themselves very well to the change of diet that has come with advancing civilization. In and around the mouth, however, most pathologic conditions can be traced to the lack of mastication. The lower jaw particularly loses in development because of the failure to exercise its function of crushing food, and as a consequence there is not room enough for the teeth. The crowding of the teeth leads to their decay sooner than would otherwise be the case, and, besides, the best possible cleansing of the teeth comes from the thorough mastication of the food. In the country districts of the poorer countries especially the teeth are excellent all during life as the result of Nature's care for them under the simpler conditions of life. When children are fed entirely on liquid diet, there is, as can easily be understood, none of that cleansing friction that comes from mastication. Once decomposing food has succeeded in bringing decomposition to the teeth themselves, there is the likelihood of infectious agents finding their way into the tissues and causing enlargements of the cervical glands. Nearly always anterior cervical glandular swelling is associated with bad teeth.

The lack of exercise of the jaws leading to deficient development affects also the posterior portion of the mouth and the pharynx. Instead of the effort needed to swallow a material that has been chewed, liquid material flows easily down the throat, and as a consequence there is likely to be an overgrowth of the succulent tissues that would ordinarily be kept in healthy tone by the exercise of the swallowing function and the stimulating friction of the passing bolus. To some extent at least this explains the enlargement of the pharyngeal adenoid tissue, and occasionally too of the tonsils, though probably in the latter case the accessory action of infective agents from decaying teeth is of importance. In a word, a vicious circle of pathologic conditions is formed as a consequence of the lack of proper exercise of the function of mastication. Now that the heated term, with its danger for children in their second summer, is past, it seems wise to recall attention to the benefit likely to accrue from the careful following of Nature in this matter of mastication rather than the too artificial standards of the dietary of an overcivilized period.

A CREDIT TO NEWSPAPERS.

Having in mind the entire dependence of the quacks and nostrum makers for their success on their alliance with the newspapers, and the ready acceptance by most papers of money received from those who murder the unborn as well as from those who plunder the invalid, the medical profession universally feels that the press, in the main, is by no means eager to stop those particular and vicious forms of graft that it finds profitable. Now that genuine effort is at last being made to expose to the world this newspaper graft, the profession will do all it can to support the effort to break up that alliance with the press that alone enables the nostrum vender to become rich by palming off whisky as medicine and morphin as a harmless remedy. In so doing, however, we must not lose sight of the good deeds of journalism. Our quarrel is not with the press, but with one of its actions. Much to the credit of American newspapers of all degrees, whether the metropolitan daily or the hamlet weekly, is their attitude toward the new etiology of yellow fever. Looking over the editorial comments on the New Orleans epidemic made by dozens of newspapers, one is struck by the well nigh universal acceptance of the mosquito theory. A well-established advance in medical knowledge has never been more readily received, nor its teaching more heartily supported. This has resulted in large part from the wise action of the United States Public Health and Marine-Hospital Service in sending out to the press a bulletin recounting in detail the work and experiments of Major Walter Reed in Cuba. Nevertheless, the frank confidence and ready receptivity of the press are most noteworthy and pleasing. It is true that here and there is found a discordant note of unprogressive conservatism, but the proportion is no greater than exists within our own medically trained ranks. The beneficial result to the public health of this hearty support of the press being so very great, the medical profession extends to the newspapers its profound gratitude.

THE CAUSATION OF ARTERIOSCLEROSIS.

The continuance of life depends primarily on the provision, through the blood, of sufficient nutriment of proper character for all of the tissues and organs of the body. Deficiency in either quantity or quality will result at first in derangement of function and ultimately, if maintained, in alterations in structure. Tissues of highest organization will naturally suffer earliest and in greatest degree. The blood vessels are likely to be involved in the morbid process, in part directly from the irritating effects of circulating noxious matters, in part indirectly through the imperfect nutrient supply conveyed by the vasa vasorum. The result will be some form of vascular degeneration, namely, atheroma followed by calcification, or sclerosis, or hypermyotrophy, or a combination of several or all. Arteriosclerosis is a common association of chronic nephritis, of which, it appears, it may be cause or effect or concomitant. Old age, excessive muscular activity and various infectious and toxic processes are also to be considered among the etiologic factors. From a review of current theories regarding the causation of arteriosclerosis, Dr. John M. Cowan[1] concludes that arterial damage may result from many and varied causes. Continued high blood pressure in time invariably affects the vessels, and this is one of the most important causes of widespread disease of the blood vessels. High blood pressure may be secondary to renal lesions or it may originate without any disturbance on the part of the kidneys. Under the latter circumstances it is to be attributed to some derangement of the alimentary tract. Excess, relative or absolute, of food stuffs or of alcohol, intestinal fermentation or putrefaction, hepatic, pancreatic or gastrointestinal insufficiency may thus all be the initial fault. The arteries may be damaged as the result of various intoxications. Metallic poisons—lead, mercury, etc.—comprise one group; bacterial toxins—rheumatism, enteric fever, etc.—another. Bacteria themselves may be present in early lesions. Syphilis is a common cause of local lesions. Severe continued physical activity, however it may act, is probably also a causal factor.

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[1] "The Rôle of Modern Dietetics in the Causation of Disease," London, Baillière, Tindal & Cox, 1905.

PUBLIC INTEREST IN RESEARCH.

The public interest in research and in scientific knowledge of various kinds has a deep significance that augurs well for the future. Mutual understanding between the lay public and scientific men is a highly important and desirable condition. Prof. John M. Coulter,[2] in discussing this subject, makes the following statements: Matter describing scientific research that is now published in popular magazines and in newspapers is scant in amount, sensational in form and usually wide of the mark. There is an increasing desire on the part of the public for information on these subjects. The usual method of presentation is through a middleman, a reporter, who presents the matter in a "popular way," and in so doing makes misleading statements and almost entirely removes the scientific atmosphere. The important need in the situation is for the scientific men themselves to study the popular method of presentation and to provide matter which is at once scientifically correct and interesting to the public. Professor Coulter appears to us to have summarized the situation very well. He calls attention very pointedly to the common misconception of the practical nature of research. When a scientific man brings out a discovery which is of marked commercial value, the laity is apt to comment on the commendable transferal of the investigator's energy from some useless laboratory experiments to a field of practical value. In this there is disregard of the fact that the so-called practical discovery is based on and is the result of, in many cases, years of laborious and patient study, which had been considered by the average layman pure waste of time. Professor Coulter urges that interesting scientific articles by competent men will show research to be practical, will secure endowment for further research, and will secure harmonious co-operation between the various persons interested.

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[1] Popular Science Monthly, August, 1905.

[1] Practitioner, August, 1905, p. 203.

REFORM IN CHARITABLE INSTITUTIONS.

Events in many parts of the country indicate the increasing interest of the medical profession in the conduct of charitable institutions. As organization becomes steadily more complete we are certain to exercise an increasing influence in this direction. A few months ago The Journal[1] suggested that each State Medical Association create a committee whose duty it should be to keep close and conscientious watch over the eleemosynary institutions of the state, having an eye particularly to securing scientific medical care for the inmates and graft-free administration. In more than one state this suggestion has been well received. President Halderman of the Ohio State Medical Association in his annual address strongly recommended the appointment of such a committee. Of course the "machine" politicians everywhere have medical friends through whom may be expected subtle efforts to keep the attention of physicians away from these "sores." The interest of the profession in this matter, however, is so direct and so great that its progress will not be stayed. In Illinois, reform from another source has just dawned in the appointment by Governor Deneen of the new Civil Service Commission. The character and past record of the appointees ensures genuine civil service among the employes of the charitable institutions of the state. The commission at its first meeting outlined a program of careful investigation and of practical execution of the new law. Their efforts to bring the Illinois institutions up to a high level of honesty and efficiency will be closely observed and heartily supported by the medical profession.

ANOTHER SETBACK FOR THE ALCOHOLIC NOSTRUMS.

These are busy times for the manufacturers of the alcoholic nostrums. Two powerful lay publications are conducting a steady and winning campaign against the use of these "hypocritical cocktails," and now the United States government has taken a hand. The Commissioner of Internal Revenue, John W. Yerkes, on September 12, officially notified collectors of internal revenue that, after Dec. 1, 1905, the manufacturers of these compounds will be called on to pay the special tax for rectifiers and liquor dealers, while the retailer must pay the special tax for liquor dealers. The ruling holds that the tax must be paid by manufacturers of every compound in which any added drugs are in such small quantity as to have no appreciable effect on the alcoholic liquor of which the preparation is largely composed. It is further held that the tax applies to "remedies" in which the added drugs, no matter what their quantity, are not of a nature to impart any medicinal character to the alcoholic liquor. When the contained drugs really are medicinal no tax will be demanded. In deciding individual cases under this ruling the manufacturer's formula will not be accepted as final. There will be a chemical examination of samples bought in the open market and analyzed in the Washington laboratories. It will thus be seen that each nostrum will come up for interpretation of its character and that discretion will be observed in the classification of any particular compound. It is earnestly to be hoped that publicity will be given to the analyses and decisions in each case, for the workings of this new ruling will be very interesting both to the profession and to the general public. If this interpretation of the statute is strictly enforced it will be a decided help in the effort to protect people from one of the most dangerous classes of popular nostrums. If it results in drawing on druggists the attention of state revenue officers and anti-saloon league workers more than heretofore has been the case, great good will come. In spite of all this assistance, however, we must not abandon the agitation to have Congress, by statute, require, under severe penalty, that every nostrum label shall state truthfully the contents of the bottle.

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[1] The Journal, March 11, 1905, p. 796.

Medical News

ILLINOIS.

Personal.—Dr. John G. Franken, Chandlerville, is slowly recovering from injuries recently sustained in a runaway accident.——Dr. Roy F. Rogers, Shelbyville, has returned from his trip to Europe.

Hospital Under Way.—The Taylorville Hospital Association has already raised $6,218 toward its building fund, and by October 1 the entire amount required of $10,000 is expected to be raised. Bids for construction of the hospital were opened September 20.

Case Against Physicians Failed.—In the damage suit brought by George Gillogly of Mount Carroll against Drs. Firestone, Karcher and Bushnell, Freeport, for alleged malpractice, the plaintiff did not make out his case and the judges entered an order to dismiss the suit.

Municipal Control of Milk Supply.—At a receent meeting of the Sangamon County Medical Society resolutions were adopted favoring the municipal control of the milk supply of Springfield, which, it was stated, is absolutely necessary in order to preserve the life and health of all, especially children and invalids.

County Hospital Examination.—Examinations of candidates for positions on the resident staff of Cook County Hospital will begin in Chicago September 28. Those who pass will be placed on the civil service eligible list and will be assigned places on the staff when vacancies occur. Dr. Fernand Henrotin is chairman of the examining board.

Endowment Conditions Changed.—A permanent hospital building for Canton is assured as the Misses Graham have agreed to purchase a site and erect a building to cost about $15,000 and to accept as an endowment fund the amount already raised by public susbscription (about $10,000), instead of $20,000, as provided in the original agreement.

Chicago.

Cocain Seller Fined.—Paul Zito, proprietor of two drug stores, and Joseph Moell, a clerk employed in one of these stores, were each fined $100 and costs for selling cocain; both have appealed.

Health Laboratory at Last at Rest.—After having received seven orders to vacate its quarters in the City Hall, after having six times succeeded in getting the order revoked, and after having secured locations in at least two other buildings, the laboratory of the health department has finally moved from the fourth floor of the City Hall to the Galbraith building, Madison and Franklin streets.

Unlicensed Practitioners in Trouble.—On September 13 Fred L. Orsinger was fined $200 and costs, and Anna Brickler $100 and costs for practicing medicine without license. The prosecution was undertaken by the State Board of Health.——Mrs. Barbara Bolle, who was accused of practicing medicine without a license and who failed to appear when the case was called, was sent to the county jail September 15, where she will be held for 90 days unless the judgment of $200 entered against her is paid.

Deaths of the Week.—During the week ended September 16, 514 deaths were reported, equivalent to an annual death rate of 13.46 per 1,000; 14 more deaths occurred than in the previous week, and 71 more deaths than in the corresponding week of 1904. Among the principal causes of death were: Acute intestinal disease, 113; consumption, 55; heart diseases, 48; violence, including suicide, 39; pneumonia and nephritis, each 34, and cancer, 26. The increase in mortality as compared with last year is 7.8 per cent., is due almost entirely to the increased prevalence of acute intestinal diseases among children under 5 years of age, caused by the frequent heavy rainfalls, followed by relatively high temperature for this season.

Personal.—Dr. O. P. Johnstone, fellow in pathology at Rush Medical College, has been appointed to the chair of pathology in the University of Colorado, Boulder.——Dr. Robert H. Babcock has returned from his summer home in Green Lake.——Dr. Henry Carey, late interne at Wesley Hospital, has been appointed a member of the staff of the Michigan State Hospital, Kalamazoo.——Dr. George F. Butler, professor of materia medica, therapeutics and clinical medicine in the College of Physicians and Surgeons, has resigned.——Dr. and Mrs. Julien E. Hequembourg have returned from the Pacific coast.——Dr. Nicholas Senn has been reappointed surgeon-general of Illinois, with the rank of colonel.——Dr. and Mrs. Oscar J. Price have returned from Europe.——Dr. and Mrs. E. C. Dudley have returned after a summer in Wyoming.——Dr. Edmund J. Doering spent the summer in the Catskill Mountains

INDIANA.

Dr. Thomas Acquitted.—Dr. William T. Thomas, Marion, who was arrested August 25, charged with a criminal operation on Ida Gaston, who died in Indianapolis the day before, was acquitted August 31, the judge stating that no evidence against Dr. Thomas existed.

Medical Society Library.—The Vigo County Medical Society has appointed a committee consisting of Drs. Knowlton, Julius R. Young and Bennet V. Caffee, to consider the advisability of establishing a medical library, space for which is expected to be obtained in the Emeline Fairbanks Library, Terre Haute.

Old Physicians.—Dr. William H. Wishard, Indianapolis, thought to be the oldest practicing physician in Indiana, is now nearly 90 years old and still answers professional calls.——Dr. Hubbard M. Smith, Vincennes, poet, historian and physician, celebrated his eighty-fifth birthday anniversary September 6.

Personal.—Dr. George D. Kahlo, Indianapolis, has returned from Europe.——Dr. Austin Funk, New Albany, sailed September 6 on the *Oceanic* for England.——Dr. B. H. B. Grayston and family, Huntington, have returned from an extensive western trip.——Dr. William H. Smith, Rushville, underwent an operation at the Ricketts Hospital, Cincinnati, and is reported to be making favorable progress toward recovery.

Knox Count Hospital.—At a meeting of the Knox County Council at Vincennes September 5, an appropriation of $25,000 was made for the erection of the county hospital. A site has been secured in South, Vincennes, which has been deeded to the county on the condition that it should appropriate enough money for the erection of the building. The Clark-Gibault Hospital Association will turn over about $5,000 to the fund. It is probable that work on the building will begin at once. It is expected to cost $50,000.

Madison Gets Hospital.—Madison has been selected as the location for the new Southeastern Hospital for the Insane. A tract of land has been accepted comprising about 393 acres on a site 346 feet above the level of the Ohio River. The provisions under which the site was accepted are as follows: That good water will be furnished the institution in sufficient quantity; that the commission will be given privilege of selecting whatever portion of the land offered it desires; that the price for the land be less than was originally specified; that the Pennsylvania Railroad construct switches to connect with the institution; that the title of the land shall be approved by the attorney-general; that streets leading to the proposed site of the hospital be improved by the city, and that the site shall be given to the commission within a specified time.

KANSAS.

Hospital Dedicated.—St. Mary's Hospital, Winfield, was formally dedicated September 3 by Bishop Hennessy of Wichita. The hospital has thirty rooms and is equipped with modern conveniences and appliances.

Personal.—Dr. D. W. Manson, Burlington, left on August 28 for Central America.——Dr. G. H. Hoxie, dean of the Kansas University School of Medicine, has removed to Kansas City.——Dr. W. F. Kuhn, El Dorado, has been appointed superintendent of State Hospital No. 4, Nevada, Mo.

Fever in State Hospital.—Typhoid fever has developed at the Topeka State Hospital for the Insane. Five employes and one inmate are ill with the disease. The superintendent believes that the ice supply of the institution, which is obtained from the Kansas River, is responsible for the epidemic.

Kansas University Hospital.—A contract has been awarded for the erection of the medical pavilion, which is to be the first building of the Eleanor Taylor Bell Memorial Hospital at Rosedale. It is proposed to build the other four buildings, one each year. The next building to be constructed will be the surgical pavilion; the third an isolation ward, and the other two will be ward buildings for general patients, all buildings being grouped around the central medical pavilion. The latter will accommodate forty patients.

LOUISIANA.

Personal.—Dr. Clarence Pierson, Alexandria, has been appointed superintendent of the Insane Asylum of the State of Louisiana, Jackson.

Physicians Take Outing.—Through the courtesy of the board of park commissioners, Dr. Rudolph Matas entertained on September 10, on board the tug *Samson*, Dr. White, United States Public Health and Marine-Hospital Service; Professor Boyce, the English scientist, and others.

Presentation to Dr. Hays.—On August 31 the employés of the Insane Hospital of the State of Louisiana, Jackson, presented Dr. George A. B. Hays, late superintendent of the institution, with a handsome silver loving-cup. Dr. Hays left September 1 for Alexandria to take charge of the new state hospital near Pineville.

MAINE.

Personal.—Dr. Eben Alden and wife, Rockland, are spending the summer in Europe.——Dr. John T. Dilling, Sprague's Mills, was seriously scalded about the face, hand and arm, and also inhaled steam, in a railway accident at Gardiner.

Hospital Notes.—A gift of $4,000 has been received for the Maine Sanitarium, Portland.——The Bar Harbor Medical and Surgical Hospital has been enlarged to twice its former size, at a cost of about $10,000.——The Japanese envoys have endowed two beds in the York Hospital.

Promises to Reform.—Theophilus Neilson of New York City, who owns a summer cottage in York Harbor, and has been practicing osteopathy there, was arrested August 24 on a warrant sworn out by Dr. William J. Maybury, Saco, secretary of the Maine Medical Registration Board, charged with violating the medical registration law. On his agreeing to discontinue the use of the prefix "Dr." he was allowed to go on his own recognizances.

Maine's Vital Statistics.—During 1904 the state registrar of vital statistics reports 11,009 deaths, 336 more than for the previous year, and 15,130 births, or 36 less than for the preceding year. The death causes which show an increase for the year are: Influenza, 74; nervous diseases, 70; diarrheal diseases, 68; typhoid fever, 63; nephritis, 62; whooping cough, 59; heart diseases, 56; rheumatism, 13; pneumonia, 12; diabetes, 9; measles, 8, and scarlet fever, 5. A decrease in deaths was noted in: Tuberculosis, 89; bronchitis, 32; peritonitis, 26, and cancer, 17.

MARYLAND.

Union of Schools.—A movement has been set on foot for a union of the schools of the University of Maryland, St. John's College, Annapolis, and the Maryland Agricultural College into a state university. A committee has been appointed to draw up a plan, of which Dr. Randolph Winslow is the representative from the School of Medicine of the University of Maryland.

Hospital Work Begins.—The Washington County Hospital Association has begun operations at Hagerstown on a moderate scale under Miss M. Grace Matthew, a trained nurse. At a meeting of the county medical society September 14 Mr. Edward W. Mealey, its benefactor, explained its plans and scope. At present only accidents, acute and subacute cases are admitted.

Faculty Meeting.—The one hundred and seventh semi-annual meeting of the Medical and Chirurgical Faculty of Maryland will be held at Deer Park, September 21 and 22. Matters to be brought before the next legislature, which convenes in January, will be brought before the house of delegates, especially a new medical practice act, new laws governing medical inspection in the counties, and a law regulating the practice of midwifery. The annual address will be delivered September 22 by Dr. Charles A. L. Reed of Cincinnati on "The American Family." Dr. W. S. Thayer, Baltimore, will also deliver an address on "Some Public Duties of the Physician." There will be a series of brief reviews of recent medical progress by Drs. Thomas B. Futcher, Frank Martin, Guy LeR. Hunner, and Frank D. Sanger, all of Baltimore; Dr. Harvey W. Cushing, Baltimore, will speak of palliative operations in intracerebral tumors; Dr. Frank J. Kirby, Baltimore, on thyroid tumors; Dr. Henry O. Reik, Baltimore, on eight cases of lateral sinus thrombosis and the advisability of ligating the internal jugular vein before opening the sinus, and Dr. James M. H. Rowland, Baltimore, on artificial interruption of pregnancy in toxemia, time and methods. The Allegany and Garrett county medical societies will entertain the members of the Faculty on the afternoon of September 22 with drives over the mountains.

Baltimore.

Typhoid.—The number of reported cases of typhoid fever for the week ended September 16 was 34, a decided decrease; deaths from the same disease, 9.

Library to Be Made Useful.—The library of the College of Physicians is to be put on a working basis. A librarian has been appointed and several hundred volumes have been collected.

Personal.—Dr. William Hewson Baltzell, now in Paris, will spend the winter in India.——Dr. Edwin Geer, commander of the Maryland Naval Reserves and surgeon of the fire department, while attempting to board a car on September 6 fell and was severely injured about the nose and face.——Dr. Edward J. Bernstein has removed to Kalamazoo, Mich., and Dr. Milton R. Walter to Chicago. Both have been connected heretofore with the University of Maryland Medical School.

MASSACHUSETTS.

Embalmers' Board Established.—Under the new state law a board of embalming has been established. Henceforth every undertaker who practices embalming must have a license, for which he must pay $5. Those in practice three years are passed, while future applicants must pass an examination by this board.

Boston Death and Disease.—For the ten weeks ended September 9 there were reported to the Boston Board of Health 2,246 deaths, as against 1,962 during the same period in 1904, and an average annual death rate of 18.50 per 1,000. Of these deaths 645 were of infants under one year, 836 of children under 5, and 406 of individuals over 60 years. There were 222 cases of diphtheria, with 15 deaths; 81 of scarlet fever, with 2 deaths; 219 of typhoid fever, with 28 deaths; 148 of measles, with 6 deaths; 403 of tuberculosis, and 215 deaths; 114 deaths from pneumonia, 11 from whooping cough, 186 from heart disease, 30 from bronchitis, and 77 from marasmus.

Good Work of Floating Hospital.—The Boston Floating Hospital's season of ten weeks ended September 13. During this time 279 patients were cared for in the four permanent wards, with 90 deaths; 90 were discharged well, 71 relieved and 28 not relieved. Of the 90 deaths 26 occurred within forty-eight hours after admission. On the last day 11 patients were transferred to the New England Hospital for Women and Children and 5 to the Children's Hospital. In the open ward, upper deck, 686 patients were cared for from 9 a. m. to 4 p. m. They made 2,374 trips, an average of 47 per day. Diplomas were given to the graduate house officers, Drs. Alpha R Sawyer and Alexander O. Fasser, to the externe in charge of day patients, Dr. W. A. Dutcher, and to 23 nurses who successfully completed the postgraduate course in the hospital.

MICHIGAN.

Large Endowment for Hospital.—By the will of the late Mrs. Julia E. Hackley, Muskegon, $300,000 is devised to the Hackley Hospital, Muskegon.

Hospital Note.—The Northern Michigan Hospital, Calumet, will be reopened about the end of September, on the return of

Dr. Charles J. Sorsen from Germany.——Dr. Peter J. Noer, formerly of Menominee, has completed a hospital building at Wabeno at a cost of $15,000.

May Be "Read Out" in Meeting.—The secretary of the Pontiac Medical Society has been ordered to keep a scrapbook in which he will paste all press notices regarding members of the society. These notices are to be read at the monthly meetings and explanations from the advertised members will then be in order.

Settlement of Contagious Disease Expenses.—Judge Perkins, Grand Rapids, rendered a decision September 7 in the Circuit Court, which defines what portion of the expense incurred from dangerous contagious diseases shall be borne by the county and what by the immediate community in which the infection exists. He holds that the expense of investigation preliminary to determining the nature of the disease, isolation, quarantine, disinfection, fumigation, or any service performed for the good of the general public, must be paid by the board of health, while expenses for medical attendance and nursing are chargeable to the county.

July and August Mortality.—During July the number of deaths reported was 2,482, an increase of 88 over June, and during August, 2,797, an increase of 315 over the preceding month. The respective death rates for July and August were 11.5 and 12.9 per 1,000. The deaths of infants under one year numbered 506 in July and 687 in August; of children from 1 to 4 years, 166 in July and 236 in August, and of individuals over 65, 678 in July and 702 in August. Almost the entire increase in mortality in August was due to the high mortality among children under 5 years of age. The more important causes of death were as follows: Tuberculosis, 196 in July and 203 in August; typhoid fever, 45 in July and 59 in August; diphtheria, 32 in July and 22 in August; measles, 10 in July and 4 in August; whooping cough, 15 in July and 19 in August; pneumonia, 65 in July and 51 in August; diarrheal diseases of infants, 204 in July and 422 in August; accidents and violence, 214 in July and 231 in August; cancer, 143 in July and 141 in August, and smallpox, 4 in July and 6 in August. Eight deaths were reported from tetanus in July, and seven of these were ascribed to the toy pistol. Two deaths from tetanus were reported in August.

Personal.—Dr. Francis H. Callow, Mount Morris, returned from England August 12.——Dr. Henry J. Hartz, Detroit, has been appointed a member of the board of trustees of the State Sanitarium for Tuberculosis.——Dr. John V. Frazier, Lapeer, has been appointed first lieutenant and assistant surgeon, M. N. G., and assigned to the Third Infantry.——Dr. Joseph B. Whinery, Grand Rapids, has been appointed a member of the Board of Health.——Dr. Thomas M. Koon, Grand Rapids, has been re-elected health officer at a salary of $1,800.——Dr. Ralph C. Apted has been appointed city physician of Grand Rapids at a salary of $1,800.——Dr. Frank B. Gray, Clare, has been appointed a member of the board of establishment and control of the state sanitarium for consumptives.——Dr. William L. Bishop, Bay City, has moved to Salt Lake City, Utah.——Dr. Alexander McK. Campbell, Grand Rapids, has been elected president of the Board of Health and Poor Commissioners.——Dr. Clarence L. Gorsline, Battle Creek, was operated on for appendicitis September 13.——Dr. Alexander Magill, Midland, who is moving to Bay City, was presented by the Midland County Medical Society, of which he is president, with a gold-headed cane, suitably engraved, at a banquet given in his honor September 7.

MISSISSIPPI.

Appropriation for Hospital.—The city council of Greenville has appropriated $3,000, to be paid in December to the King's Daughters' Hospital.

Illegal Sale of Cocain.—A druggist in Greenville was recently fined the maximum amount of $500 and six months in jail for selling cocain regardless of the statute, which forbids its sale except on prescription of a licensed druggist. This particular individual was said to have sold from $10 to $12 worth of cocain a day.

Amendment to Charter.—The Jackson Hospital Company, a corporation with its domicile in Jackson, has petitioned that its name be changed to the Jackson Sanitarium and Training School for Nurses, and that its charter shall be so amended as to give the corporation the additional power and authority to conduct the training school for nurses.

Personal.—Dr. John R. Tackett, Meridian, a member of the executive committee of the State Board of Health, is assisting Dr. John F. Hunter, secretary of the board, with the executive work of his office.——Dr. Percy W. Toombs has been appointed health officer of Greenville.——Dr. Walter Merritt, Jackson, has been elected third assistant physician of the State Insane Hospital, Jackson.——Dr. Harry H. Harrison, Jackson, has been appointed a member of the State Board of Health; Dr. Osborn M. Turner, president of the Jackson Sanatorium, and Dr. Ethelbert H. Galloway, city physician of Jackson, all vice Dr. John H. Rhodes, deceased.——Dr. Samuel H. McLean has been elected vice-president and Dr. Ethelbert H. Galloway, secretary, of the Jackson Sanatorium.

MISSOURI.

Personal.—Dr. Claude C. Crowley has been elected president, and Dr. Robert Sevier, clerk, of the Richmond Board of Health. Drs. Charles B. Shotwell and Elmer T. McGaugh are the other members of the board.

Typhoid at State University.—Typhoid fever is reported as epidemic at the State University, Columbia. Since the beginning of the epidemic seventy-one cases have been reported, with one death.

Doctor Released.—In the case of Dr. Elizabeth Short, Kansas City, charged by the coroner with having performed a criminal operation on Mrs. Louise O'Leary from the effects of which she died, the defendant was discharged August 19 because of lack of sufficient evidence.

Mount Vernon Gets Sanatorium.—At the meeting of the board of commissioners in St. Louis September 4, Mount Vernon was selected as the location of the new Missouri State Sanatorium for the Treatment of Incipient Pulmonary Tuberculosis. Mount Vernon's offer included a site of 165 acres, valued at $8,500, a bonus of $7,000 in cash, water and electric lights free of charge to the state for five years, and free telephone service.

Personal.—Dr. Frederick L. Deck, St. Louis, has returned from a trip to Japan.——Dr. Ira C. Young, St. Louis, has been appointed lecturer on orthopedic surgery at the St. Louis College of Physicians and Surgeons.——Dr. and Mrs. John A. James, St. Louis, have returned from Europe.——Dr. George James P. McNeil, house surgeon at the M. K. & T. Hospital, Sedalia, returned August 31 from Europe.——Dr. Frank S. Vernon, Charleston, has been re-elected physician at State Hospital No. 4, Charleston, for a term of two years.——Dr. Emil H. Henckler, vaccine physician, St. Louis health department, was appointed physcian-in-charge of the North End Dispensary September 1, succeeding Dr. Franz J. T. Specht, resigned.

St. Joseph.

Asylum Pavilion Opened.—The new Carey building, a pavilion for women at State Hospital No. 2, was formally opened September 6.

Gift to Library.—Dr. Jacob Geiger has presented to the library of the Medical Department of the St. Louis University a complete set of Virchow's archives, comprising 170 volumes.

Personal.—Dr. Louis J. Dandurant has had conferred on him the degree of master of arts by the faculty of Conception (Mo.) College, August 25.——Dr. Peter J. Kirschner was admitted to State Hospital No. 2, August 31 as a private patient.——Dr. Samuel F. Kessler was elected president, and Dr. Luther A. Todd, secretary, of the Northwest Missouri anatomical board, organized under the state law for the purpose of securing subjects for dissecting purposes for the local medical college.

NEW JERSEY.

Agree Not to Accept Contract Work.—"Every physician in Trenton has signed an agreement not to accept contract lodge work in any form," says the August number of the *Pennsylvania Medical Journal.*

Personal.—Dr. Wesley R. Wales, Cape May, who was indicted in the United States District Court for misapplying $16,000 funds of the First National Bank of Cape May, was acquitted September 16 after the jury had deliberated only fifteen minutes.

Sanitary Milk Plant for Camden.—Stimulated by the results achieved by sanitary milk plants in the neighboring cities, the city of Camden started a movement to establish a similar plant in that city. The subject was first considered by the Camden City Medical Society. The public records of Camden show that the death rate of children under 5 years of age during the past twelve months exceeded 36 per cent. of the whole number born during the same period. The bacteriologic examinations of the Camden milk supply show that a large number of the deaths are among children, due to milk contamination. A company has been organized with medical men at its head. The officers are as follows: President, Dr. Alexander McAlister; vice-president, Dr. A. Haines Lippincott; secretary, Dr. Howard F. Palm; treasurer, M. F. Ivins; counsel, Thomas P. Hurley; chemist, Paul H. Langner, and veterinary inspector, Dr. J. O. George.

NEW YORK.

Donation to Hospital.—The Brooks Memorial Hospital, Dunkirk, has received a first-class hot-water system costing $2,000 through the generosity of Mr. M. L. Hinman.

Buffalo Personals.—City Bacteriologist William G. Bissell has been delegated to represent the health department at the American Public Health Association.——Dr. Charles Cary is taking an automobile trip through the eastern states.

Loses Suit.—In the suit brought by Dr. Clarence V. Grey, Elba, against the town of Darien to recover $100 for medical services rendered an alleged pauper, on September 1 the jury returned a verdict of no cause of action and judgment with costs was entered against the plaintiff.

Complies with Law.—In compliance with the provision of the law requiring physicians to register in counties in which they practice, Dr. Welcome L. Filkins, Albany, who had been charged by representatives of the Madison County Medical Society with a violation of the public health law, was discharged from custody.

Hospital Incorporated.—The Eastern Long Island Hospital Association of Suffolk County has been incorporated to maintain a hospital and dispensary. Among the directors are the following physicians: Drs. Barton T. Skinner, Clarence C. Miles and Arthur C. Loper, Greenport; Dr. Frank E. Benjamin, Shelter Island, and Dr. J. M. Hartranft, Southold.

The Work of the Mission.—The Fresh Air Mission, Buffalo, in its report of work done during the summer at Cradle Beach, showed that 698 children were received through the regular two weeks' outings and that 51 others were cared for at St. Margaret's Convalescent Cottage. The hospital at Athol Springs has been almost full since the opening day.

Personal.—Dr. George E. Beilby, resident physician at the State Industrial School, Rochester, has resigned.——Dr. and Mrs. Florence O. Donohue, Syracuse, returned from Europe August 13.——Dr. William R. Wells, Mount Morris, received the congratulations of his friends August 18 on the eighty-sixth anniversary of his birth.——Dr. Albert L. Beahan, Canandaigua, was operated on for appendicitis August 25 and is doing well.——Dr. Mary Clayton, Ogdensburg, has been appointed physician at the Binghamton State Hospital, to succeed Dr. Mary O'Malley, resigned.——Dr. Charles I. Redfield, Middletown, has been elected a member of the medical board of Thrall Hospital, vice Dr. David B. Smiley, deceased.——Mr. Alec. H. Seymour, Binghamton, has resigned the clerkship of the Broome County Surrogate's Court to accept the secretaryship of the State Board of Health, succeeding Dr. William E. Johnson, Waverly.——Dr. Henry L. Elsner and family, Syracuse, returned from a trip to Scandinavia August 30.——Dr. C. H. Glidden, Little Falls, has been appointed health officer of Little Falls.——Dr. Nathan Jacobson and family, Syracuse, returned from Europe September 2.

New York City.

Bequest for Hospital.—Among the numerous charitable institutions benefited by the will of the late Edward Whelan is St. Mary's Hospital, Brooklyn, which received $5,000.

New Hospital Busy.—The St. Gregory's Free Hospital and Ambulance Station, which was opened at 93 Gold Street on June 9, has treated more than 3,500 cases since that time and at present receives on the average 75 emergency and accident cases a day.

Typhoid Fever Decreasing.—The latest report of the health department shows a decrease of 47 cases of typhoid fever in the city in the week. The prevalence of this disease was greatest during the last week in August, but the death rate at the present is almost normal.

Harvey Society Lectures.—The first lecture of the recently organized Harvey Society will be given by Prof. Hans Meyer, who will speak in German, on "The Theory of Narcosis," October 7, at 8:30 p. m., in the New York Academy of Medicine. The second lecture will be given October 14, at the same hour and place, by Prof. Carl von Noorden of Frankfort, on "Modern Problems of Metabolism." The lecture will be delivered in English.

In Trouble.—For swindling the poor folks of the East Side, posing in the guise of a healer of the sick, Alfred Meyer, a former convict, was sentenced August 4 in the Court of Special Sessions, Manhattan, to imprisonment for eleven months in the penitentiary on Blackwell's Island and to pay a fine of $500.——David Antonio, a "voodoo" doctor, on August 31 was sentenced to imprisonment for six months for practicing medicine without a license.

Heavy Fine for Milk Dealer.—On September 8 a new justice had his first experience with offenders against the pure milk ordinances. In the first case, in which a plea of guilty was entered, a fine of $75 or thirty days in the Tombs was imposed. Ten of the other offenders pleaded guilty, preferring to have their cases postponed until some other justice presided. Those held were warned that another plea of guilty would mean imprisonment with no alternative fine.

Notes from Quarantine.—There were seventeen persons removed from the Panama steamer *Mexico*, who were sent to Hoffman's Island for observation. This is the largest number taken from a canal zone steamer in several months.——The yellow fever patient at Hoffman's Island shows signs of improvement, and it is believed that he will recover.——The Hamburg-American liner *Moltke* brought no steerage passengers, a case of cholera having appeared among the Russian immigrants at Hamburg.

Personal.—Mr. and Mrs. Arthur S. Chittenden arrived on the *La Bretagne*, from Havre, September 12.——Dr. and Mrs. Edward P. Kinnicutt arrived from Antwerp on the *Kroonland* September 12.——Dr. Vincenzo Sellaro has been threatened with death by the Black Hand if he does not surrender $5,000 to them.——Dr. Hugh C. Parmenter was removed from his position as senior surgeon at Harlem Hospital by order of Superintendent Armstrong of Bellevue and allied hospitals, on the charge of abusing the father of a patient in the hospital. Dr. Parmenter has appealed and hopes to have the case reinstated.

Contagious Diseases.—There were reported to the sanitary bureau for the week ended September 2, 670 cases of tuberculosis, with 147 deaths; 282 cases of typhoid fever, with 21 deaths; 144 cases of diphtheria, with 13 deaths; 122 cases of measles, with 11 deaths; 48 cases of scarlet fever, with 2 deaths; 18 cases of cerebrospinal meningitis, with 8 deaths; 7 cases of varicella and 1 case of smallpox. For the week ended September 9, 396 cases of tuberculosis, with 146 deaths; 184 cases of typhoid fever, with 23 deaths; 117 cases of diphtheria, with 14 deaths; 95 cases of measles, with 7 deaths; 48 cases of scarlet fever, with 2 deaths; 12 cases of cerebrospinal meningitis, with 12 deaths; and 8 cases of varicella.

NORTH CAROLINA.

Medical College Opened.—The Department of Medicine of the University of North Carolina, Raleigh, opened for its fourth annual session September 11.

Vital Statistics.—The mortuary reports for July from 21 towns show that 290 deaths have been reported, equivalent to an annual death rate of 22.6 per 1,000. Diarrheal diseases caused 73 deaths; consumption, 33; typhoid fever, 25; heart diseases, 14, and brain diseases, 11. Of the 290 deaths 129 were of children under 5 years of age.

Personal.—Dr. Edward C. Register, Charlotte, has spent the summer in Europe.——Dr. Eugene B. Glenn, Asheville, has ben made major surgeon of the N. C. N. G., and assigned to the First Infantry.——Dr. William DeB. MacNider, Raleigh, has been elected professor of pharmacology and bacteriology in the Department of Medicine of the University of North Carolina.

NORTH DAKOTA.

Personal.—Dr. W. G. Brown, Fargo, formerly of St. Cloud, Minn., has recently returned from Europe.——Dr. S. G. White has located in Minot.

Illegal Practitioners Arrested.—Dr. J. H. Sweeney was recently arrested at Lehr, McIntosh County, and fined $50 for practicing medicine without a license.——Dr. J. Bergstrom, Cooperstown, was fined $50 for a similar offense.

Medical College Opened.—The Medical College of the University of North Dakota will open September 26. The dean announces that the university laboratories, equipment and instruction have been so arranged as to offer a combination of two years of academic work and two years of premedical work, so that the certificate of graduation from the academic department will admit students to the third year in the medical college.

OKLAHOMA.

Personal.—Dr. Leopold Kaffle, Oklahoma City, has been made assistant physician at the Insane Asylum of the State of Louisiana, Jackson.

Hospital Closed.—The Oklahoma City Hospital, Guthrie, one of the important institutions of the city, was closed July 31, owing to disagreement of the staff regarding its management, and the patients were removed to St. Anthony's Hospital.

Hospitals Incorporated.—The Mangum Hospital has been incorporated with $10,000 capital stock.——Dr. John H. Scott has opened a nineteen-room hospital at Shawnee.——The Woods County Hospital Association has been incorporated at Alva with a capital stock of $10,000.

Asylum Investigation.—The committee appointed to examine the conditions existing at the Norman Sanitarium has reported that there has been no ill-treatment, but that the number of attendants is insufficient, that the sanitary facilities should be greatly improved, and that the colored and white patients should be kept in separate wards.

Law Not Retroactive.—The attorney-general has rendered an opinion in answer to a request regarding the osteopathic practice law, whether or not those who were practicing when the law went into effect would be required to take an examination. The attorney-general gives as his opinion that those who were in practice prior to March 17, 1903, need not be examined.

State Association Chartered.—A charter was issued July 31 to the Oklahoma State Medical Association. The headquarters of the association are at Guthrie, and the following are the officers and incorporators: Dr. Richard H. Tullis, Lawton, president; Dr. Eugene O. Barker, Guthrie, secretary and treasurer, and Drs. W. E. Dickens, Enid, James M. Bonham, Hobart, and J. Henry Barnes, Jet.

PENNSYLVANIA.

Meeting of the State Medical Society.—The annual meeting of the State Medical Society will be held at Scranton, September 26, 27 and 28. The address in medicine will be given by Dr. Solomon-Solis Cohen, Philadelphia.

Typhoid at Nanticoke.—Typhoid continues prevalent in Nanticoke and new cases are still being reported. Dr. Frederick C. Johnson of the State Board of Health is investigating the cause of the epidemic and has charge of the fight against the disease. There were 27 new cases reported September 13. Altogether 212 cases have been reported.

Reading Relief Report.—The statement of the Philadelphia & Reading Railroad Relief Association for the month of July shows an expenditure of $19,907.20, of which $8,950 was paid for deaths and $10,957.20 for disability. The number of deaths was 17; 5 were accidental and 12 from natural causes. The number of new cases reported was 1,035.

School Teachers Asked to Observe Health Laws.—Apropos of the opening of public schools September 11 Dr. Samuel G. Dixon, state commissioner of health, has communicated with the principals of all the public, private and parochial schools throughout the state, calling their attention to the statute requiring all pupils to be successfully vaccinated before being admitted.

Philadelphia.

Visitors from Abroad.—Dr. Raymond Santos of Lisbon, Portugal, visited the city hospitals and medical schools last week.——Dr. Charles Keys, a resident of Brazil, is paying a visit to this city.

Medical Inspection in August.—The report of the division of medical inspection of the Bureau of Health for August shows that there were 14,486 inspections made, excluding schools; that 372 fumigations were ordered; 5 cases presented for special diagnosis; 60 cultures taken for examination; 60 injections of antitoxin given, and 892 vaccinations performed.

Health Report.—The deaths reported from all causes during the week ended September numbered 399. This is an increase of 25 over the number reported for the previous week and a decrease of 9 from the number reported in the corresponding week of last year. The principal causes of death were: Typhoid fever, 10; diphtheria, 4; tuberculosis, 65; cancer, 17; meningitis, 2; apoplexy, 12; heart disease, 34; acute respiratory disease, 23; enteritis (under 2 years), 44; enteritis (over 2 years), 5; nephritis, 27; suicide, 6; accidents, 23, and marasmus, 20. There were reported 166 cases of contagious disease, with 16 deaths, as compared with 196 cases and 17 deaths in the previous week.

RHODE ISLAND.

Receiver Appointed for Hospital.—Dr. Thomas H. McNally, mayor of Central Falls, has been appointed temporary receiver of the Pawtucket General Hospital.

For the Benefit of the Tuberculosis Camp.—The fête of Mr. and Mrs. Frederick W. Vanderbilt, Newport, August 15, netted $13,500 for the tuberculosis camp at Pine Ridge.

Medical Inspectors of Schools.—The Providence Board of Health has decided to appoint two physicians to visit private schools and see that the children in attendance are afflicted with no contagious disease. A physician is also to be detailed for duty at the office of the health board to examine such children as may be sent there from the public school.

Hospital Opened.—The two new wings of the Woonsocket Hospital, one of which was the gift of Mrs. Mabel Rathbun Jenckes, wife of Dr. Frank H. Jenckes, and the other built with funds raised by different public entertainments for the benefit of the hospital, were opened recently for public inspection. The hospital itself has been remodeled and newly equipped.

Twin City Hospital.—The first meeting of the board of directors of the Twin City Hospital was held at Pawtucket September 4, when the following were confirmed as a permanent hospital staff: Surgery—Drs. William L. Harris, Richard P. Boucher, Providence, and Raynor Woodhead, Valley Falls; Medicine—Drs. Thomas H. McNally, Central Falls, and William O'Brien; Gynecology—Drs. William H. Heimer, Pawtucket, and Joseph Myre, Central Falls; Eye, Ear, Nose and Throat—Dr. Henry M. Jewett, Providence.

GENERAL.

Smallpox in Cuba.—A fatal case of smallpox in a child has been reported from the village of Palma Soriano, in the province of Santiago.

The Association of Erie Railroad Surgeons.—This association held its annual meeting at the Hotel Astor, New York City, September 12 and 13, under the presidency of F. A. Goodwin of Susquehanna, Pa. The following officers were elected for the ensuing year: President, M. S. Cramer, Kenton, Ohio; vice-president, D. A. Currie, Englewood, N. J.; secretary and treasurer, J. A. Allis, Montclair, N. J.

Association of Military Surgeons of the United States.—The fourteenth annual meeting of this association opens in Detroit September 26. Among the distinguished foreign representatives are Dr. S. Suzuki, surgeon-general of Japan and chief surgeon of the combined fleets of Admiral Togo; Drs. Ho Kan Yen of the Chinese Navy, Ying Yung Tsui of the Chinese Army, and Wang-Hang-Chung of the South China Army, and representatives from the British, Mexican, Canadian, Guatemalan and other foreign services. The representatives of the medical department of the United States Army are Col. Valery Havard, assistant surgeon-general, who has just returned from Manchuria, and Majors William C. Borden and Charles M. Gandy. In addition, Major Louis Livingston Seaman, who has just returned from the seat of war in Manchuria, will give his experiences from the viewpoint of the Japanese Army at the front. The meetings will be held in the auditorium of the Hotel Cadillac, the first session opening at 10:30 a. m., Tuesday, September 26.

The Yellow Fever Situation.—In New Orleans the yellow fever situation continues encouraging. The new cases each day run from 25 to 40, but there are few deaths. The heroic efforts of Tallulah have promptly improved the situation, and elsewhere in Louisiana the epidemic waned. In Mississippi, Vicksburg and Natchez continue to report a few new cases, but vigorous efforts have brought the disease fully under control. Arkansas is relatively quiet. Governor Davis has appointed Dr. Ben. L. Harrison, Jonesboro, to succeed Dr. William H. Jackson on the State Board of Health. In his letter of appointment the governor said: "The State Board of Health will be recognized in the future as a human institution."——The case at Maysville, I. T., proved not to be yellow fever.——Florida has presented the most unfavorable news of the week. There has been a sharp increase of new cases in Pensacola, together with some failure of public effort to meet the conditions.——Atlanta and the state of Georgia maintain a sort of armed neutrality.——At Chattanooga the local superintendent of quarantine was discharged for permitting two refugees to drive through the town.——At Columbia, S. C., the board of health resigned because the city council would pay no attention to its recommendations.—Menominee, Mich., and Marinette, Wis., each reported a refugee ill with yellow fever.

FOREIGN.

Variola in Chili.—According to the *Public Health Reports*, the epidemic of variola is increasing and is spreading from city to city.

Mushroom Poisoning.—The German public health authorities have issued a pamphlet on "Mushrooms," which is given free to officials and organizations for distribution.

Professor Toldt of Vienna in the House of Lords.—The well-known professor of anatomy at Vienna, Karl Toldt, has been appointed a life member of the Austrian house of lords.

Graefe Medal Goes to Hering.—The German Ophthalmological Congress has awarded the Graefe medal this time to Professor Hering of Leipsic for his works on the physiology of optics.

Next French Congress of Neurologists and Alienists.—The question to be discussed at the next meeting, which will be held at Lille in 1907, are the "Senile Brain" and the "Responsibility of Hysterics."

Principles of Ethics in Spanish Dress.—The *Boletin de la Asociacion Medica de Puerto-Rico* has just concluded the publication, in Spanish, of the Principles of Ethics of the American Medical Association.

Mailing of Infectious Material.—The German government now requires that infectious material from or forwarded to bacteriologic institutes must be mailed in special receptacles, made according to government models.

New Hospital in French Indo-China.—The authorities at Cambodia, in French Indo-China, it is reported, have decided to establish a general and lying-in hospital for natives at Phom-Penh. The work of construction is to be started immediately.

First International Congress for Psychiatry and Neurology.—It is announced that the First International Congress of Psychiatry and Neurology is being organized to convene at Amsterdam, Sept. 3-8, 1907. Professor Jelgersma of Leyden will preside.

Medal for Work on Vaccine.—The French Académie de Médecine, through the minister of the interior, has awarded a silver medal to Dr. Alan Green, bacteriologist in charge of the vaccine lymph department of the Lister Institute of Preventive Medicine, for his work on vaccine, published in the Proceedings of the Royal Society.

Plague in the Argentine Republic.—It is reported that there has been a reappearance of this disease in Santiago del Estero. The sanitary authorities are taking every possible precaution to prevent the spread of the disease, and are especially directing their efforts toward extermination of rats in private dwellings as well as in public buildings.

Epidemic Cerebrospinal Meningitis in Germany.—The epidemic seems to be declining in Silesia, where it made its first appearance with such ravages. It is becoming more prevalent in Western Prussia, and some leading medical authorities, we learn, are quite pessimistic in regard to it, even asserting that the disease may prove to be the terror of the twentieth century and sweep over the world.

Anti-tuberculosis Campaign in Bulgaria.—The Association of Bulgarian Physicians has had a popularly written "Catechism for the Fight Against Tuberculosis" printed and distributed gratuitously throughout the country, especially in educational centers. All the schools of the upper grades now have each a medical inspector who lectures occasionally on hygiene and inspects the scholars twice a week to detect transmissible diseases.

Death of Physician from Hydrophobia.—Dr. Feiber of Holzapfel, Germany, was bitten by a mad dog three months ago. The wound was carefully treated and he went the next day to the Berlin Institute for Infectious Diseases, where he was given twenty-one preventive inoculations and was then dismissed as cured. He did not believe that the cure was complete, and ten weeks after the injury symptoms of hydrophobia developed, fatal in four days.

The Neuburger Endowment for Scientific Research.—The friends of Dr. T. Neuburger of Frankfort, Germany, presented him with $20.000 on the occasion of his fiftieth professional anniversary, two years ago. He added $5.000 and presented the sum to the authorities to be applied to promote scientific researches. It has been decided to devote the income from the endowment for the next five years to the cancer research work at the local Institute for Experimental Therapy.

Training in Forensic Medicine.—Two years ago the Paris medical faculty organized an Institute of Legal Medicine and Psychiatry to aid in training medicolegal experts for the courts. A diploma in legal medicine and psychiatry was given on completion of the course, which was open to any physician or university medical student, native or foreign. The *Semaine Médicale* brings the information that the course has been recently enlarged to include criminology and penal law, mental and legal medicine.

Cholera in Madras.—The epidemic in Madras is said to have assumed alarming proportions. The death rate for the last week in July was 89 per 1,000, and in some places is said to have reached 200 per 1,000. The infection is said to have been carried to villages in the suburbs of Madras, and unless severe measures are quickly adopted it is feared that the epidemic will spread to the railroad work shops at Perambore, where are thousands of workmen, and even to the Madras water supply at Red Hills.

Rejection of Recruits with Tendency to Mental Affections.—The German authorities have recently issued more stringent regulations to prevent the acceptance of new recruits with a tendency to mental affections, and to detect those already enrolled. In a number of garrisons permanent arrangements for postgraduate training in neurology and psychiatry are to be made. For several decades a course in psychiatry has been obligatory for the students in the military medical college at Berlin. The official notice also contains suggestions for detection of simulation.

Prizes Offered by Mexican Academy of Medicine. — Two prizes of $500 each are offered for the current year by the National Academy of Medicine at Mexico. The first is for the best work on the early diagnosis of tuberculosis and means to prevent its spread. The second prize is for the study of leprosy in Mexico, its most frequent clinical types, and means to prevent its spread. Competing articles must be received by the secretary before October, 1896, accompanied by the name of the author in a sealed envelope. The only condition is that the articles must be in Spanish.

The Leipsic Chair of History of Medicine.—The chair provided by the Puschmann endowment has been fully organized, and Prof. Karl Sudhoff of Hochdahl has accepted its incumbency. He has recently been made chairman of the permanent international committee of arrangements for the International Historical Congress of investigators interested in the study of the natural sciences. Sudhoff's name is well known by his researches on the works of Paracelsus. The Puschmann endowment provides also for other features of the history of medicine besides the professorship, as already mentioned in these columns.

Postgraduate Schools at Milan.—It is reported that by arrangement between the Italian ministers of public instruction and finance, the official representatives of the province and commune of Milan and the managers of the hospitals of that city, it has been decided to establish postgraduate schools of clinical midwifery and gynecology, diseases of occupation, and contagious epidemic diseases. The first will have 200 beds, the second 60, and the third 164, distributed among seven pavilions. Others may be created later. The estimated cost of these establishments is $53,000. The directors are to rank with university professors.

Epidemic of Anterior Poliomyelitis in Norway.—Platou describes in the *Tidsskrift f. d. Norske Laegefor.* for September an epidemic of 20 cases of acute anterior poliomyelitis in his district last year, with 6 deaths. The first cases seemed to develop from contact infection, but no connection could be determined for the later scattered cases. The age of the children ranged from 7 weeks to 14 years. No adult was attacked. The legs were affected with paralysis more than the arms; complete hemiplegia was not observed in any instance. The severity of the disease varied in different cases, some running an abortive course, while death occurred abruptly in others. The disease terminated fatally or else in complete recovery in time. Treatment and disinfection were the usual measures.

Return to Germany of Professor Baelz of Tokio.—Professor Baelz has returned to his old home, Stuttgart, after a residence of twenty-nine years in Japan. For twenty-five years he has been a leading and pioneer professor in the medical college at Tokio, and almost all the Japanese physicians of the day have been his pupils. His works on the anthropologic and pathologic peculiarities of the Japanese have been numerous and important, as also his contributions to the study of beriberi and other tropical diseases. He is now 60 years old, and received many tokens of friendship and esteem from the mikado and empress of Japan and Japanese scientific societies, as well as from personal friends, before he left the country last June. He was professor of physiology at first and later of internal medicine and gynecology. He married a Japanese.

Laryngologists Refuse to Take Part in Approaching International Medical Congress.—The laryngologists of the world have taken exceptions to the rulings of the Fifteenth International Medical Congress, which group otology, rhinolaryngology and stomatology in a single section. The laryngologists of Great Britain have officially declared that they would refrain from participating in the congress and the Germans are following suit. The committee of arrangements of the international congress have consequently notified the national committees of propaganda that the rulings have been modified so that Section XII is now divided into three subsections, Rhino-laryngology, XII a, Otology, XII b, and Stomatology, XII c. The laryngologists have long been considering the advisability of holding a specialist international congress, and occurrences seem to be tending this way.

Pecuniary Damages for Inoculation with Syphilis.—A Berlin court recently awarded a young woman $725 and a monthly allowance of $37, as she presented testimony to show that her health had been seriously undermined by syphilis transmitted by a druggist with whom she cohabited. These sums were reduced to $400 and a monthly allowance of $12.50 by the court of appeals. The defendant based his defense on the fact that the woman was not an ignorant young girl, and that three physicians who had been treating him for syphilis contracted two years before, had declared that he was entirely cured a month or so before the relations with the young woman had commenced. The judge remarked that the defendant must have been fully aware of the malignancy of the disease, and must have known that he might transmit it after two years, as it is liable to remain virulent for three years or more.

First International Congress of Physicotherapy.—The membership of this congress, which met at Liège August 12, numbered over 650, and fully 200 members took part in the discussions. The principal countries were officially represented and great enthusiasm prevailed among the members. Jacques of Brussels remarked that in this congress physicotherapy left the domain of empiricism and acquired a soul. The empirics were represented in the congress, and the measure proposing to limit the practice of physicotherapy to physicians was modified so that it was not so drastic as its promoters intended. The congress was divided into four sections, hydrotherapy and climatotherapy, electrotherapy, radiology and treatment by movements or exercise. It was voted to organize another similar congress two years hence, and Geneva was chosen for the meeting place. Dr. F. B. Bishop of Washington was the official delegate from this country.

League of Defense Against Anemia.—Twenty-five prominent citizens of Porto Rico gathered at San Juan, August 6, and organized the national "Liga de Defensa contra la Anemia." Seventeen of those present were physicians; the honorary presidency of the league was conferred on Dr. B. K. Ashford, with J. G. Martinez as acting president. Ashford advocated dividing the island into five to ten districts with a hospital of forty beds in a central station in each district and traveling dispensaries, going from village to village until treatment, advice and the principles of sanitary living are imparted to every corner of the island and every inhabitant. The league intends to solicit the further aid of the government and collect subscriptions for the work, and have every physician enrolled in its membership. Weekly lectures are to be given, explaining to the people the necessity and means of preventing uncinariasis. The league also plans to publish circulars and distribute annual prizes to those who distinguish themselves in propaganda and investigation.

Confusion in Smallpox Statistics in Germany.—Official declaration of cases of smallpox is compulsory for physicians in Germany, but as so very few of them have ever had a chance to see a case of the disease, it is frequently difficult for them to recognize it. This fact renders more astonishing a recent statement in the Paris *Progrès Médical*, with comment in other French exchanges, to the effect that during the last few months 2.726 cases of smallpox have occurred in Prussia, with 1.534 deaths. The figures are those of the epidemic of cerebrospinal meningitis, and our French exchanges evidently did not recognize the familiar disease under its German name of *Genickstarre*. This term means stiffness of the neck, and is another instance of the habit which scientists so often have occasion to deplore—the use by the Germans of colloquial terms in the titles of scientific writings, which foreigners are unable to recognize without a dictionary. The term cerebrospinal meningitis is common to all languages nowadays and it is freely used in Germany, but the popular term *Genickstarre* is still often used, and to the confusion of French editors in this case.

Monument to Semmelweis.—A committee has been formed at Budapest to collect subscriptions for a monument to I. P. Semmelweis, in honor of his work on the etiology of puerperal fever. He was born in that city in 1818, and was resident physician at the Vienna Maternity when he noted the resemblance between fatal pyemia from a scratch at the dissecting table and fatal puerperal fever. He ordered all the students to wash their hands in a solution of calcium chlorid before examining a lying-in patient, and with this order reduced at one stroke the number of cases of puerperal fever to the minimum. Dr. Oliver Wendell Holmes in this country had announced, a short time before, that puerperal fever was infectious. This was probably unknown to Semmelweis. His discovery was not announced and did not become generally known until several years after, when it was published abroad by a general practitioner and a dermatologist of Vienna. Semmelweis' first article on the subject appeared not long after in Hungarian, but the world knew little of it until 1860, when he published a large work in German on the etiology and prevention of puerperal fever. He died in an insane asylum at Vienna in 1865. Two biographies of him have recently been published, one in English and one in German. The latter, although incorrect in some points, gives a good picture of the man and his life work.

Dangers of Medical Certificates.—A certain Belgian physician has been the defendant in a suit for damages which has been dragging through the courts for four years, until recently dismissed. The plaintiff did not have the slightest grounds for his suit, but he was able to keep it in the courts and barely missed gaining his point. He was enabled to do this by certificates furnished him by thoughtless physicians, testifying that he was the victim of a nervous affection "apparently due to an operation on the testicle in 1898, performed by some empiric," or "the result of a badly treated testicular affection." A third certificate stated that the nervous affection was the "result of an operation on the testicle in 1898." These certificates had been given him by thoughtless hospital physicians, who commiserated his condition and accepted without investigation his statements that the operation on the testicle had been the source of his ills. The plaintiff, who had performed the operation, was an interne at the time, and the operation was skillfully done. The patient then had already been under treatment for the nervous affection which he attributed later to the operation. He could not have obtained a hearing in the courts if it had not been for the certificates he produced from three medical authorities who allowed their philanthropic emotions to blind them to the necessity for cautious investigation of the case. In delivering such a certificate, the *Gazette méd. Belge* comments, the possible injury to a third party should always be borne in mind, and the applicant's statements should not be accepted without investigation.

Cholera in Europe.—Our Russian exchanges under the heading of "Epidemics," mention the yellow-fever situation at New Orleans and the plague in India, but have nothing to say in regard to any epidemic diseases in Russia except that 14 cases of epidemic cerebrospinal meningitis were reported throughout the entire empire during July. Our German exchanges state that the cholera-infected region in northeastern Prussia is enlarging, and that new cases have been found on some of the other waterways besides those first infested. So far, the disease has been confined to raftsmen coming through from Russia and persons in contact with them. Up to August 30, 20 cases suspicious of cholera had been reported to the authorities, and bacteriologic examination showed that 12 were true cholera, with 6 deaths. A third case has been discovered at Hamburg. The epidemic in Germany has reached a total of 202 cases, with 77 deaths, according to cable reports dated September 18. The record for the twenty-four hours preceding was 3 new cases and 1 death. Sixteen districts have been declared infected and precautionary measures taken. The *British Medical Journal*, editorially, states that the responsibility which rests on Germany at the present is very great. Practical sanitation in the remote, small towns is still in a very backward state, and the conditions across the border in Russia are still worse. The British and American authorities are on the alert defensive, and are enforcing the measures which proved successful in warding off cholera during the previous epidemics in Europe.

Revolution in Nursing in France.—The Journal has mentioned several times the expressions of wonder and admiration lavished by French medical visitors on the trained nurses of America and England. Nothing like the trained nurses of these favored lands has hitherto been known in France. The hospitals offer no accommodations suitable for gentlewomen, and the profession of nurse has therefore never appealed to this class of women seeking a means of self-support. For centuries the nursing was done by sisters of charity, and only comparatively recently have the hospitals been laicized. A beginning has now been made that promises a revolution in nursing methods, and the *Journal de Méd. de Paris* proudly asserts that it is no longer necessary for the French physician to expatriate himself to behold a model training school for nurses. The physician, Dr. Lande, who is mayor of Bordeaux, has succeeded in organizing in the new city hospital, the Tondu, a training school for nurses on the latest and most approved lines. Its success has been marvellous, the editorial adds, during the year since it was organized; "the patients themselves seem transformed. One can read in their eyes their delight in being surrounded by kind, devoted and sympathetic young women in an atmosphere of physical and moral cleanliness." The *American Journal of Nursing* states that this revolution is due in great part to Dr. Anna Hamilton, who ten years ago took charge of the nursing and founded a training school for nurses at the Protestant Hospital at Bordeaux. Her graduates are now ready to carry the reform to other hospitals. In Paris another group of women has established a small model training school for nurses in the heart of Paris, connected with two private hospitals. It is a striking object lesson for the authorities in charge of the public hospital work, and will no doubt aid effectually in the revolution now going on in hospital nursing in France.

Campaign Against Yellow Fever in Mexico.—Isolated cases of yellow fever still occur in Mexico and will probably continue to occur here and there, but the prompt, systematic and radical measures taken stamp out the disease before it has a chance to develop into an epidemic. In his official report for 1904 Liceaga, chief of the National Board of Public Health, states that during 1903 and 1904 there were 699 cases throughout the entire republic, and 147 deaths. From September, 1903, to January, 1905, house-to-house visits were made to the number of 1,081,177, and 751 immune persons and 99,372 non-immune were taken in charge. The number of inspections of deposits of water was 126,081, and inspections of immune persons, 455,801; of non-immune, 678,009; of travelers arriving, 10,073, and of travelers leaving, 12,314. Nearly 4,500 dwellings, 67 ships and 1,813 railroad cars were disinfected; 237,521 collections of water were drained away or treated with kerosene. Disinfection of the loosely-built native huts is a difficult matter. He found that the mosquitoes were able to escape by the smallest outlets. In one of his tests ten mosquitoes were placed in a small air-tight room which was then fumigated. A cover had been placed over the keyhole outside. Seven of the mosquitoes were found dead in the room, but the three others were found in the cover over the keyhole. In one experience in a fortress, where the windows formed long passages through the thick stone walls, the mosquitoes sought refuge in the depths of these windows, and the air in them prevented the entrance of the sulphur fumes. When the windows were opened the mosquitoes escaped alive. As soon as sulphur was set to burn in each separate window passage the epidemic of yellow fever ceased at once. He closes the native huts mosquito-tight with a cloth covering outside. A strip of canvas is carried from the foot of the wall to the eaves and here supported by a bar of wood on uprights. It is then carried over the roof and down the other side to the foot of the wall. Other strips are applied in the same way, lapping over the first, until the sides and roof of the hut are covered. The front and rear are then covered with strips sewed together to make a solid sheet, sewed also to the first of the strips passing over the sides and roof. This insures the killing during the sulphur fumigation not only of the mosquitoes, but also of all the other insects that had found shelter in the structure. Liceaga adds that the general mortality of Vera Cruz has been much reduced by the sanitary and prophylactic measures undertaken there in the campaign against yellow fever. It was only 1,858 in 1904; in 1903 it was 2,566. The deaths from yellow fever were reduced from 375 in 1903 to 12 in 1904, and four of the latter were imported cases.

Pharmacology

Scientific Work Misrepresented and Commercialized.

In pursuance of the deliberately assumed purpose to enlighten the physicians of the United States on all features of the traffic in proprietary remedies, there will be offered to our readers not only information regarding the composition of such remedies, but also facts concerning the methods of their advertising and sale, which come to light in such shape as to be of service to the profession. No firm or product will be subjected to attack, but publicity will be given to all facts obtainable. Having in mind this purpose the following recital of facts is offered to the profession as an illustration of methods employed in the proprietary trade, and as a step in the era of pharmaceutic publicity.

Under date of Dec. 1, 1904, there was published by the government of Porto Rico a "Report of the Commission for the Study and Treatment of 'Anemia' in Porto Rico." The splendid scientific results of this study of uncinariasis we commented on editorially[1] February 11, page 478. A few weeks ago the M. J. Breitenbach Company of New York circulated among physicians what purports to be an abstract of this report, claiming that "this report alone would suffice to establish pepto-mangan at once as the foremost hematinic known." Physicians, of course, realize that no other proprietary firm ever had so many "original" "write-ups" inserted in the reading pages of medical journals. It may fairly be said that the medical press has been subsidized by the Breitenbach Company to an extent equaled by no other. So in this instance, medical journals have recently been publishing as "reading notices," or as "publishers' notes," extracts from the company's pamphlet, especially made for the purpose. The Breitenbach Company having, as quoted, staked so much on the results of the commission's use of "pepto-mangan (Gude)," it becomes a matter of medical importance to look into the facts.

The commission treated, so far as covered in this report, 5,490 cases of uncinariasis. Of these it presented in detail the clinical histories of 61 cases. In 18 of these 61 cases the commission administered "pepto-mangan (Gude)," which had been donated by the Breitenbach Company. Of these 18 cases the Breitenbach Company says they "were selected on account of their extreme severity, and thus these cases represent the most crucial test to which any iron preparation can be subjected." Further, we are told: "The results obtained point so distinctly to the supremacy of "pepto-mangan (Gude),'' etc., and "the report may be regarded as a supreme test" and "as a triumph for pepto-mangan (Gude)."

With these claims before us it is more than interesting to analyze the reports of the cases from which they are drawn. In 14 of the 18 "pepto-mangan (Gude)" cases that combination was the only iron preparation used; in the remaining 4 Blaud's pill was used during the latter part of treatment. In the other 43 cases (not mentioned in the Breitenbach pamphlet) the iron was administered in the form of Vallet's mass or Blaud's pill, either or both, with the exception of two cases in which no iron was used. In closing its report the commission notes that iron alone without expulsion of the uncinaria is of little benefit and plays a part secondary to anthelmintics. Therefore, in this "supreme test," the relative value of the hematinic used will be largely determined by the time consumed in relieving the symptomatic anemia after removal of the parasitic cause.

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[1] This editorial brought from the Breitenbach Company a letter addressed to THE JOURNAL of the American Medical Association, which is worth quoting in this connection, and also in connection with the correspondence with the *Medical Record*, which follows. The italics are ours.

"It seems to us, in looking over the issue of your journal for Feb. 11, that the editorial department of your publication is quite *at variance with your advertising pages.* A short while ago we sent you a new electrotype stating that peptomangan was particularly applicable to the anemia of uncinariasis, and produced positive results if administered after proper treatment for the expulsion of the parasite. We did not make this statement until we had had conclusive proof from tests made by eminent men in the profession that such was the case. We make no haphazard statements ourselves. *It is evident that either your editors do not read the advertising pages of your journal, or they wish to make a direct slap at one of their advertisers, and we can hardly see how it is to be any advantage for us to place an advertisement with you, if in the editorial pages you are going to directly contradict our statement.* We refer to your editorial on page 478, in which you make the statement. 'The day of blind *reliance on iron, quinin and tonics in general in the treatment of anemic conditions in tropical countries is past, never to return,'* and this in the face of our advertisement for which we pay you. It looks to us a little like taking our money and in turn going out of your way to slap us in the face, for had that paragraph been omitted from your editorial, we think you will agree with us that the value of the article would in no way have been lessened, and we should feel in a very different frame of mind than we do now. Had it been written by one of your contributors we would have let the statement pass, and set it down to ignorance, but coming as it does from your editors, *who should be thoroughly conversant with the advertisements you carry,* we can not but feel that it is *very unfriendly* toward us.

"We shall be glad to hear from you on the subject."

Analyzing the 61 cases the following facts come to light, and it should here be noted that nothing in the original report indicates the "extreme severity" of the "pepto-mangan (Gude)" cases as compared with those in which other iron preparations were used. For the present purpose it is sufficient to compare the "pepto-mangan (Gude)" cases with those in which Blaud's pill alone was used:

	Cases.	Av. time of treatment. Days.
"Pepto-mangan (Gude)" cases reported cured	9	79.77
"Pepto-mangan (Gude)" cases reported cured in which Blaud's pill was used in latter part of treatment	5	74.8
Blaud's pill cases reported cured.	26	49

Two "pepto-mangan (Gude)" cases were reported "improved" in an average treatment time of 87 days, while the other two were fatal cases. This "supreme test" then shows that the patients treated with Blaud's pill recovered from the anemia in less than two-thirds of the time required when "pepto-mangan (Gude)" was used. On this point the commission itself says (page 119): "Thus it is quite difficult to accurately judge the comparative value of different iron preparations, yet it is noticed, even by some patients, that Blaud's pill gave more rapid results."

In the face of these clinical facts and of this plain declaration from the commission, the physician may well ask: Why in the name of prudence did the Breitenbach Company circulate a pamphlet and advertise in medical journals a claim that "this report alone would suffice to establish pepto-mangan at once as the foremost hematinic known?" As the report actually draws a contrary lesson, the course of the company can only be explained either as due to its exaggerated confidence in the credulity of physicians or to its own neglect to read the report before abstracting it. Which hypothesis is most probable? Physicians who have read the "write ups" of "pepto-mangan (Gude)" appearing in nearly all the medical journals of the country will have no difficulty in answering this question. Lastly, what of the honesty of circulating among medical men so misleading a document?

The Medical Record and the Propaganda Against Nostrums.

A little while ago the New York *Medical Record* contained a two-page advertisement of the Etna Chemical Company, which evidently was intended to counteract the effect of the report of the Council on Pharmacy and Chemistry which showed phenalgin to be a simple acetanilid mixture. Still more recently the same journal contained another two-page advertisement, one of which was occupied with a cartoon intended to cast ridicule on the efforts being made against the nostrum evil. Since these advertisements appeared in a scientific medical journal and a journal that is supposed to represent intelligent physicians, one might charitab'y suppose that they were admitted through lack of supervision. Such does not appear to be the case, however.

Under date of September 8, the editor of THE JOURNAL of the American Medical Association sent the following letter to the *Medical Record:*

To the Editor:—

Your issue for last week, September 2, contains a two-page advertisement of the Etna Chemical Company relating to their preparation, phenalgin. One page is entirely taken up with a cartoon evidently intended to deride THE JOURNAL of the American Medical Association, the Council on Pharmacy and Chemistry of the American Medical Association, and the propaganda against nostrums. The other page contains what is presumed to be an answer to the official announcement of the Committee on Chemistry regarding its investigation into certain preparations offered to the profession and to the public, especially as it is related to phenalgin. Permit me to quote from the advertisement as it appears on advertising page 21 of the *Record:*

> "Recently certain ill-advised persons have attempted to confuse Phenalgin with patent and quack Nostrums and have so far succeeded that the influence of the Journal of the American Medical Association has been brought to bear against our legitimate and ethical business."
>
> "We believe that Commercialism of the rankest kind has dominated this absurd crusade against us. These people may call Phenalgin a mixture, or a compound, or anything that pleases them; it does not in the least change the fact that Phenalgin is just what we have always said it to be."
>
> "We know that doctors who are practicing medicine and prescribing Phenalgin will continue to do so regardless of the reports of alleged analytical chemists whose experience in the sick room is an atom of a myth compared with that of those who are continually using our product."

My object in writing you is to briefly state certain facts solely for the information of your readers.

What the Council on Pharmacy and Chemistry of the American Medical Association is and what its functions are are well known to your readers. While the council has been outlining plans for work, making investigation into various products, it has published but one official report: this was on six preparations, viz.: ammonol, antikamnia, Koehler's headache powders, orangeine, phenalgin and salacetin (sal-codeia-Bell). The report on phenalgin was as follows:

> "According to the analyses of the contents of the original sealed packages as purchased, this was found to be a mixture, and to contain the following ingredients approximately in the proportions given:
>
> | Acetanilid. | Sodium bicarb. | Ammonium carb. |
> |---|---|---|
> | 57 | 29 | 10 |
>
> "Certain packages of phenalgin were purchased which on analysis did not show ammonium carbonate."

The committee signing the report[1] and vouching for its truthfulness consisted of:

J. H. Long, M.S., Sc.D., professor of chemistry in the Northwestern University Medical School and director of its chemical laboratories, the author of "A Text-book of Physiological Chemistry" and other works on chemistry, and, last year, president of the American Chemical Society;

W. A. Puckner, Ph. G., professor of chemistry in the School of Pharmacy of the University of Illinois, and a contributor of scientific articles to chemical journals;

S. P. Sadtler, Ph.D., professor of chemistry in the Philadelphia College of Pharmacy, author of "A Text-book on Chemistry," associate editor of the U. S. Dispensatory, and a member of the Committee on Revision of the U. S. Pharmacopeia;

Julius Stieglitz, Ph.D., professor of chemistry in the University of Chicago, a man of wide repute as a chemist, and the author of several works on chemistry; and

H. W. Wiley, M.D., Ph.D., chief of the Bureau of Chemistry of the Department of Agriculture, Washington, D. C.

Besides the above, other chemists assisted in the work, and the following made analyses of phenalgin:

H. M. Gordin, Ph. D. (Berne), professor of chemistry in the School of Pharmacy of the Northwestern University, who has done a large amount of original work, as his contributions to chemical literature will show; and

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[1] The Journal A. M. A., June 3, 1905, p. 1791.

Max D. Slimmer, B.S.M.A. (University of Chicago), Ph. D. (Berlin), who has several fellowships in chemistry in the University of Chicago, who has done considerable original work in chemistry, and who is recognized as an honorable and capable analytical and consulting chemist.

These are the gentlemen referred to in the advertisement in the *Medical Record* as "alleged analytical chemists."

In a former advertisement the Etna Chemical Company says: "We protest against the Association of Phenalgin in that publication" (meaning The Journal of the American Medical Association) "with patent medicines and nostrums as an uncalled-for insult to a reputable American Manufacturing Chemical Industry."

In this statement, the Etna Chemical Company gives physicians the right to ask whether it is "reputable" to inveigle them into prescribing a simple acetanilid mixture under the supposition that it is a definite synthetic chemical substance and to charge a dollar an ounce for a preparation the ingredients of which cost less than five cents.

There is, however, one assertion made in the advertisement which, I think, is well taken. The preparation is certainly not now a "secret remedy," for the Council on Pharmacy and Chemistry has cleared up all doubts as to the composition of "ammoniated-phenylacetamide."

Since you did not see fit to publish, or mention, the report referred to above, but have allowed your advertising pages to be used to slur the Council on Pharmacy and Chemistry of the American Medical Association, as well as The Journal of the American Medical Association, I think it only fair to your readers that they be informed of the facts in the case, as far as they refer to phenalgin. I, therefore, ask that you kindly publish this.

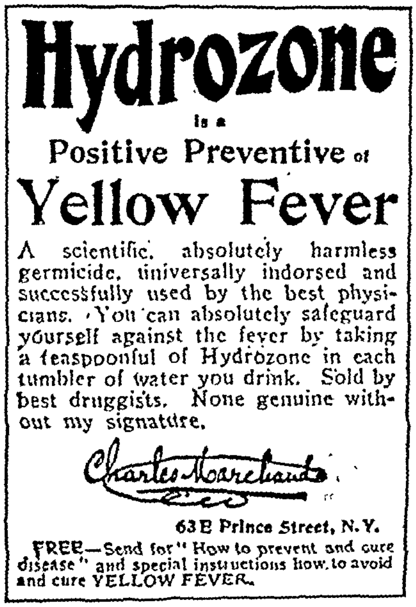
To the above the editor of the *Medical Record* replied under date of September 12:

> It has always been the aim of the editor of the *Medical Record* to keep the editorial and advertising pages of the journal entirely distinct, and in continuing that policy I am forced regretfully to return your letter replying to an advertisement in the issue of September 2. If there should at any time be anything in the reading pages of the *Medical Record* relating to you or the Association whose interests you guard so well, to which you might take exception, I promise you the opportunity to reply fully and freely; but I am not responsible for what appears in the advertising pages, and can not open the correspondence department to letters in commendation or condemnation of anything appearing in that part of the journal. I regret the seeming discourtesy to you, but you surely can see to what abuses it might lead were correspondents permitted to discuss in the reading pages the statements made by advertisers.
>
> Thomas L. Stedman.
>
> P. S.—If you publish this letter in your own journal or elsewhere, I trust you will, in justice to the *Medical Record* and to me, publish also this letter giving my reason for refusing you the hospitality of our columns. T. L. S.

We are very glad to know that "the editorial and advertising pages of" the *Medical Record* are "entirely distinct." Since antikamnia, ammonal, phenalgin and salacetin, in the form of sal-codeia-Bell, each occupies from a half to a page in the *Record*, some physicians were unkind enough to insinuate that this was the reason the editor totally ignored the report which exposed these preparations. Dr. Stedman's letter shows that this could not be, since the editorial and advertising departments are "entirely distinct."

Preying on the Sick.

The moral principle governing the action of secret proprietary and patent medicine men is an unknown quantity; sometimes it would seem to be a negative one. Just how much lower in the scale of humanity a man can go than to prey on the fears of a people in the time of a terrible epidemic for the sake of a few dollars we do not know. There may be something more despicable, but what is it? Two weeks ago we referred to the cold-blooded methods of the peruna people; this week we reproduce an advertisement from the New Orleans *States* that tells another story of man's inhumanity to man.



Hydrozone

is a

Positive Preventive of

Yellow Fever

A scientific, absolutely harmless germicide, universally indorsed and successfully used by the best physicians. You can absolutely safeguard yourself against the fever by taking a teaspoonful of Hydrozone in each tumbler of water you drink. Sold by best druggists. None genuine without my signature.

Charles Marchand

63 E Prince Street, N.Y.

FREE—Send for "How to prevent and cure disease" and special instuctions how to avoid and cure YELLOW FEVER.

This brings up the problem that we are trying to solve, viz.: "What is the difference between a 'secret proprietary medicine' advertised in medical journals to physicians, and a 'patent medicine' advertised in newspapers to the public." Hydrozone is being advertised in nearly all medical journals, and at the same time in the newspapers. Where shall we place it? And if hydrozone, with the methods recently adopted to exploit it, is tolerated in the medical press, why not peruna?

Tongaline and Yellow Fever.

Tongaline, too, is good for yellow fever if we are to believe the absurd claims made by its enterprising salesmen. Here is the advertisement from current medical journals:

> "*Stegomyia fasciata* has produced an epidemic of yellow fever in certain sections of Louisiana and adjoining states.
>
> "*Stegomyia punctata* has inoculated thousands with virulent malarial germs throughout the balance of the Mississippi Valley.
>
> "Tongaline, Mellier, in one of its forms as indicated, antagonizes and destroys the effects of these parasites on account of its extraordinary eliminative action on the liver, the bowels, the kidneys and the pores, whereby the poison is promptly and thoroughly expelled. For full literature, etc."

Correspondence

Patent Medicines: A Good Suggestion.

Rogersville, Tenn., Sept. 13, 1905.

To the Editor:—Under separate cover I am to-day mailing you a marked copy of the *Rogersville Review*, a weekly newspaper published in this, a town of about 3,000 inhabitants. I have had the editor copy your editorial[1] of September 2 on

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1. "A Miserable Outrage," The Journal, Sept. 2, 1905, p. 722.

the patent medicine fraud as it prevails in the United States with special reference to peruna. These little weekly papers circulate among the rural people, where every issue is read through, ads and all alike. I would suggest that you induce every member of the American Medical Association to have this or some like article occasionally brought out in his home paper. Surely all the physicians of a town would have sufficient influence with their local paper to do this. I assure you that it would work wonders. The people at large have never heard anything but praise of these nostrums, and they fully believe that the ads are written and sanctioned by the medical profession.

This plan would doubtless not work in the larger cities where the advertising bills are large, but it could very easily be done with the small daily and weekly papers, published in villages and towns, as you will see. I propose to have some articles of the kind appear every week. The sums paid these small papers for carrying patent medicine ads is a mere pittance.

J. E. Miller, M.D.

Marriages

Francis J. Peter, M.D., to Miss Laura Jordan, both of Omaha, August 16.

Harry E. Alderson, M.D., to Miss Cordelia Bishop, both of San Francisco, September 26.

Arnold Brandt, M.D., Seattle, Wash., to Miss Ethel Tope of St. Louis, Mo., September 6.

William W. Jarrell, M.D., Thomasville, Ga., to Miss Sadie Luff of Nashville, Tenn., September 6.

Frank Edmoundson-Nabers, M.D., to Miss Bevelle Comer, both of Birmingham, Ala., September 6.

George Lone Everall, M.D., Clinton, Iowa, to Miss Amy Mabel Ford, at Evanston, Ill., September 12.

William Watson McKibben, M.D., to Miss Olive Beatrice Flint, both of Worcester, Mass., September 11.

Thomas Francis Coneen, M.D., to Miss Jane Cecilia Cunningham, both of Portland, Maine, September 4.

George Thomas Rankin, M.D., Akron, Ohio, to Miss Anna Allison Jones of Zanesville, Ohio, September 12.

Edwin Heddon Shepard, M.D., Syracuse, N. Y., to Miss Edna Mitchell of Hornellsville, N. Y., September 7.

James Matthew Booher, M.D., to Miss Retta Kelly Brown, both of Louisville, Ky., at Jeffersonville, Ind., April 9.

James T. Jelks, M.D., Hot Springs, Ark., to Miss Belle McKaskle, Pony, Mont., at Butte, Mont., September 7.

John H. Gilpin, M.D., Fort Wayne, Ind., to Mrs. Fred Lochrane of Montgomery, Ga., at Cincinnati, September 16.

Charles R. Chapman, M.D., Springfield, Mass., to Miss Hazel Vivian Sheffield of Chicago, at Winona Lake, Ind., September 6.

Deaths

John G. Park, M.D. Harvard University Medical School, Boston, 1866, member of the Massachusetts Medical Society; acting assistant surgeon in the Navy during the Civil War; superintendent of the Worcester City Hospital in 1871; from 1872 to 1877 assistant superintendent of the State Insane Hospital; from 1877 to 1879 on the staff of the Hospital for the Chronic Insane, and from 1879 to 1890 superintendent of the Worcester Insane Hospital, and thereafter a citizen of Groton, Mass., died in the Worcester City Hospital after an operation for gallstones, August 29, aged 67.

Thomas Menees, M.D. Transylvania University Medical Department, Lexington, Ky., 1846, one of the most eminent physicians of the South; a member of the Confederate congress and for many years a professor of obstetrics in the medical department of the University of Nashville and of Vanderbilt University, died at his home near Nashville, September 7, aged 82.

James W. Jackson, M.D. University of Louisville Medical Department, 1873, formerly of Cocoanut Grove, Fla., but recently a resident of Sherman, Texas, died in the North Texas Hospital for the Insane, August 23, from injuries alleged to have been inflicted by attendants in the asylum, who were arrested on the charge of murder.

James M. Gist, M.D. Medical Department of the University of Nashville (Tenn.), 1860, surgeon in General McRae's brigade, C. S. A., during the Civil War, twice a member of the state legislature and very prominent in White County, Ark., died at his home in Beebe, September 10, after a short illness, aged 71.

Colin P. Dewar, M.D. McGill University Medical Department, Montreal, 1882, a member of the Canadian Medical Association and past president of the Ottawa Medico-Chirurgical Society and of the Ottawa Medical Society, died at his home in Ottawa, Ont., September 7, from uremia, after an illness of five days, aged 40.

Hiram H. Russell, M.D. Starling Medical College, Columbus, Ohio, 1863, assistant surgeon of the One Hundred and First Ohio Volunteer Infantry during the Civil War, and later of the One Hundred and Thirty-eighth Infantry, O. N. G., died at his home in Hyde Park, St. Joseph, Mo., September 10, after a lingering illness, aged 70.

Lyman Potter, M.D. Starling Medical College, Columbus, Ohio, 1850 one of the oldest and most respected practitioners of Delaware County, Ohio, for many years a member of the Delaware County Medical Society, died from senile debility at his home in Leonardsburg August 29, after a decline of three months, aged 93.

Benjamin T. Kneeland, M.D. Geneva (N. Y.) Medical College, 1851, formerly of Dalton, N. Y., surgeon of the One Hundred and Thirtieth New York Volunteer Infantry during the Civil War and at its close brevet colonel, died at his home in Nunda, N. Y., September 3, from senile debility, aged 80.

Alexander D. Mackenzie, M.D. University of the State of Oregon Medical Department, Portland, 1894, of Portland, for several years secretary of the Portland Medical Association, died at St. Vincent's Hospital, Portland, from tuberculosis, August 25, after an illness of five months, aged 45.

B. Frank Park, M.D. Rush Medical College, Chicago, 1901, a member of the American Medical Association, a rising young physician of Omaha, and an instructor in the Omaha Medical College, died suddenly while making a professional call September 8, from cerebral hemorrhage, aged 28.

John H. Rhodes, M.D. Louisville (Ky.) Medical College, 1880, city physician of Jackson, Miss., a member of the State Board of Health, and president of the Jackson Sanitarium, died suddenly near his home in Jackson August 30, from heart disease, aged 45.

Charles C. Rubless, M.D. College of Physicians and Surgeons in the City of New York, 1873, for many years health officer of Morrisville, Vt., died at his home in that place September 11, from diabetes, after an illness of several years, aged 53.

Thomas Gilfillan, M.D. Berkshire Medical College, Pittsfield, Mass., 1855, a member of the Massachusetts Medical Society, and a surgeon in the army during the Civil War, died at his home in Northampton, Mass., September 9, aged 75.

Samuel Jackson, M.D., assistant surgeon United States Navy, commissioned in 1838 and retired in 1879, with rank of commodore, died at his home in Washington, D. C., July 22, from apoplexy, after an illness of two weeks, aged 88.

Gustavus A. Richardson, M.D. New York University, New York City, 1875, Hyattsville, Md., died at the Railroad Y. M. C. A. Hospital, Hagerstown, Md., September 1, from nervous collapse after an illness of several weeks, aged 60.

Thomas W. Poole, M.D. University of the Victoria College, Coburg, Ont., 1865, said to have been the oldest practitioner and once mayor of Lindsay, Ont., died at his home in that place August 28, after a lingering illness, aged 74.

E. Algo Donmyer, M.D. Baltimore Medical College, 1896, of Herington, Kan., while riding on a freight train near Enterprise, Kan., September 7, lost his balance, fell from the train and broke his neck, causing instant death.

Isaac Emmett Nicholson, M.D. Bellevue Hospital Medical College, New York City, 1894, died at his home in Oakland September 9, from cerebral embolism following typhoid fever, after an illness of two weeks, aged 34.

Frederick T. Lape, M.D. College of Physicians and Surgeons, Baltimore, 1896, formerly of Poughkeepsie, N. Y., died at the home of his parents in Athens, N. Y., September 4, from tuberculosis, after a long illness, aged 29.

Hugh L. Tobin, M.D. Jefferson Medical College, Philadelphia, 1880, twice physician at the state penitentiary, Frankfort, died from inflammation of the bowels at Pope Sanitarium, Louisville, September 14, aged 44.

James C. Lovejoy, M.D. Rush Medical College, Chicago, 1848, a pioneer settler of Greene County, Iowa, died at his home in Rippey, Iowa, September 6, from cerebral thrombosis, after an illness of two weeks, aged 87.

James W. Karr, M.D. University of Louisville Medical Department, 1848, a resident of Hickory Withe, Tenn., for 72 years and a practitioner in that place for 55 years, died at his home August 27, aged 79.

Christopher C. Jacobs, M.D. Bellevue Hospital Medical College, New York City, 1886, a member of the Medical and Chirurgical Faculty of Maryland, died at his home in Frostburg, Md., September 12, aged 54.

Eugene William Dickinson, M.D. St. Louis, 1891, formerly an attendant at the Topeka State Hospital, died in Topeka, Kan., September 6, after an illness of fourteen hours, from apoplexy, aged 33.

Dennis Lincoln Russell, M.D. Rush Medical College, Chicago, 1872, assistant surgeon during the Civil War, died at his home in Rushville, Ill., September 5, after a long illness from dropsy, aged 70.

John Jay Richards, MD. Medico-Chirurgical College, Kansas City, Mo., 1901. formerly of Agra, Okla., was accidentally shot and killed while hunting near Nevada, Mo., September 7, aged 28.

Rebecca Barnard, M.D. Woman's Medical College of the New York Infirmary, New York City, 1878. died recently at her home in Worcester, Mass., and was buried September 12.

Samuel C. Beard, M.D. University of Virginia Medical Department. Charlottesville, 1853, died at his home in Lewisburg, W. Va., from disease of the stomach, August 26, aged 73.

John N. Dunlap, M.D. University of Virginia Medical Department, Charlottesville, 1843, a pioneer physician of Saline County, Mo., died at his home in Miami, August 27.

Ernest Fruh, M.D. Jefferson Medical College, Philadelphia, 1886. of Philadelphia, died suddenly in a street car in that city September 7, from heart disease, aged 53.

Albert Koebig, M.D. University of Strasburg, Germany, 1873, while despondent, shot himself through the heart at his home in Houston, Texas, August 30, aged 64.

Orville C. Nally. M.D. Western Pennsylvania Medical College. Pittsburg. 1900. died at his home in Stotesbury. Mo., September 6, from typhoid fever, aged 32.

Thomas S. Allan, M.D. Hospital College of Medicine, Louisville, 1882, died from consumption at his home in Bloomingdale, September 11.

Deaths Abroad.

K. Schweigger, M.D., the successor of von Graefe as professor of ophthalmology at Berlin, died at Berlin August 23, aged 75. He retired from his official post on account of ill health in 1900. He published the *Archiv f. Augenheilkunde* and numerous text-books and special articles, and his perimeter and method of advancement, resection of the optic nerve and modification of cataract operations ensure him a prominent place in the history of ophthalmology.

O. v. Bungner, M.D., director of the Hanau Hospital and author of numerous articles on various branches of surgery and general pathology, died at Hanau, August 27, aged 47. One of his latest works was the collecting of data in regard to the importance of injuries of the tissues in the etiology of tumors.

Book Notices

Treatise on Orthopedic Surgery. By Edward H. Bradford, M.D., Surgeon to the Boston Children's Hospital, Consulting Surgeon to the Boston City Hospital, Professor of Orthopedic Surgery, Harvard Medical School, and Robert W. Lovett, M.D., Surgeon to the Infants' Hospital and to the Peabody Home for Crippled Children, Assistant Surgeon to the Boston Children's Hospital, Assistant in Orthopedic Surgery, Harvard Medical School. Third Edition. Illustrated by 592 engravings. Cloth. Pp. vi-669. Price, $5.00 net. New York: William Wood & Company. 1905.

This edition differs from the edition published six years ago chiefly in arrangement, improved illustrations, and in the chapters on congenital dislocation, scoliosis, and coxa vara, as it is especially in these subjects that recent advance has been made. It is noteworthy that one of the authors has been a large contributor to this advance in congenital dislocation of the hip, while the other has borne the same relation to scoliosis; *the sections on these subjects, therefore, are authoritative.*

Diseases of the Heart. A Clinical Text-Book for the Use of Students and Practitioners of Medicine. By Edmund H. Colbeck, B.A., M.D., B.C. (Cantab); F.R.C.P. (London); D.P.H. (Cantab), Physician to Out-patients at the City of London Hospital for Diseases of the Chest. With 43 Illustrations. Second Edition, Revised and Enlarged. Cloth. Pp. 350. Price, $2.50. Chicago: W. T. Keener & Co. 1905.

This book is an unusually complete and clear description of the heart and its diseases. Although small, the book is so concisely written that it contains an unusually large amount of information. It can be praised quite as much for its good arrangement, clearness and accuracy as for its fullness.

The Intestinal Catarrhs, Being a Clinical Study of Colitis, Appendicitis and Their Allies: with a Special New Section on Sprue. By Edward Blake, M.D., Member of the Royal College of Physicians. Second Edition. Cloth. Pp. 356. Price, $2.00 net. Chicago: W. T. Keener & Co.

This book is full of interesting scraps of information, but it is most loosely constructed. As a treatise on intestinal catarrhs it is a failure. Almost every page is padded with such sentences as these: "But as in politics, my country first, afterwards my party. So in pathology, truth first, with the utmost tolerance of catholicity; then a view held with a loose hand."

The Public Service

Army Changes.

Memorandum of changes of stations and duties of medical officers, U. S. Army, week ending September 16:

Ford, Clyde S., asst. surgeon, reports on temporary duty at Fort McPherson, Ga., since September 6.

Morris, E. R., surgeon, on arrival at San Francisco, from Manila, P. I., ordered to Fort Slocum, N. Y., for duty.

Shepard, John L., asst. surgeon, left Army General Hospital, Presidio of San Francisco, on thirty days leave of absence.

Davis, Wm. B., deputy surgeon general, and Corbusier, Wm. H., deputy surgeon general, relieved from duty in the Philippines Division, to take effect October 15, 1905, and January 15, 1905, respectively.

Havard, Valery, asst.-surgeon general, Borden, William C., surgeon, and Gandy, Charles M., surgeon, are detailed to represent the Medical Department of the Army at the Fourteenth Annual Meeting of the Association of Military Surgeons of the United States, at Detroit, Mich., September 26-29.

Asst. Surgeons Samuel E. Lambert, Wm. H. Moncrief, Wm. T. Davis, Charles F. Morse, Clarence H. Connor, Nelson Gapen, Louis C. Duncan, and Philip W. Huntington (Dec. 15, 1905), Cary A. Snoddy, Samuel J. Morris, Harry S. Purnell, John W. Hanner, Horace D. Bloombergh, and Leon T. Lewald (Jan. 15, 1906), and Robert L. Carswell (Feb. 15, 1905), are relieved from duty in the Philippines Division, and will proceed to San Francisco on the transports sailing from Manila, on or about the dates designated after their names.

Asst. Surgeons William Roberts, Fort Hamilton, N. Y., Frank C. Baker, Presidio of Monterey, Cal., Robert M. Blanchard, Fort Thomas, Ky., William E. Vose, Fort Sheridan, Ill., Frank T. Woodbury, Plattsburg Barracks, N. Y., Edmund D. Shortlidge, Army and Navy General Hospital, Hot Springs, Ark., George F. Jeunemann, Fort Ringgold, Tex., De Loffre, Samuel M., Fort Schuyler, N. Y. (Nov. 5, 1905), Wal [illegible] on, Wash., James F. Edwards, Fort [illegible] ce DeWitt, Fort Washakie, Wyo., Rob [illegible] Wash., Charles R. Reynolds, Army G [illegible] Barracks, D. C., Frederick A. Dale, F [illegible] cAndrew, Patrick H., Jefferson, Barrack [illegible] W. Williams, Fort Greble, R. I., James I [illegible] Jan. 5, 1906), are relieved from duty at the stations designated after their respective names, and will proceed to the Philippine Islands for duty, on the transports sailing from San Francisco on or about the dates specified.

McCall, James H., contract surgeon, leave of absence extended twenty days. Relieved from further duty at Fort Moultrie, S. C., and ordered to his home, Huntingdon, Tenn., for annulment of contract at expiration of leave of absence.

Lemmon, Robert, c [illegible] McKinley, Me., and arrived at Fort War [illegible] duty.

Vaughan, Milton, [illegible] from duty at Fort Crook, Neb., and ord [illegible] ock, Ark. for annulment of contract.

Gardner, Fletcher, contract surgeon, granted an extension of twenty-four days to his leave of absence.

Koyle, Fred T., contract surgeon, granted leave of absence for one month.

Carpenter, Alden, dental surgeon, left Vancouver Barracks, Wash., on detached service to Fort Liscum, Alaska.

Kennedy, James S., contract surgeon, will, on abandonment of Fort Grant, Ariz., proceed to Fort Omaha, Neb. for duty.

Navy Changes.

Changes in the Medical Corps, U. S. Navy, for the week ending September 16:

Waggener, J. R., medical director, detached from the Navy Yard, Mare Island, Cal., and ordered home to wait orders.

Anderson, F., Medical Inspector, detached from the Marine Barracks, Washington, D. C., September 12, and ordered to the Navy Yard, Mare Island, Cal., for duty as Medical Officer of that yard and in command of the Naval Medical Depot.

McClurg, W. A., medical inspector, detached from the Bureau of Medicine and Surgery, Navy Department, and ordered to the Marine Barracks, Washington, D. C., September 18.

McCormick, A. M. D., surgeon, ordered to the Naval Academy.

Lowndes, C. H. T., surgeon, detached from the Naval Academy and ordered to the *Texas*.

Dunn H. A., P. A. surgeon, ordered to the Naval Proving Ground, Indian Head, Md., September 15.

The following assistant surgeons have been ordered to report at the U. S. Naval Medical School, Washington, D. C., September 30, for course of instruction: F. M. Shook, G. M. Olson, R. A. Warner, F. H. Brooks, E. O. J. Eytinge, P. R. Stahlnaker, F. S. Sellers, C. D. Munger, B. Elmore, H. T. Nelson, N. S. Hathaway, J. B. Mears, E. R. Marshall.

Farwell, R. G., asst.-surgeon, detached from the Brooklyn and ordered to duty on the second torpedo flotilla on the *Worden*.

Hart, G. G., acting asst.-surgeon, ordered to the *Glacier*.

Public Health and Marine-Hospital Service.

List of changes of station and duties of commissioned and non-commissioned officers of the Public Health and Marine-Hospital Service for the seven days ending September 13.

Banks, C. E., surgeon, to proceed to Montgomery, Ala., for special temporary duty.

Guiteras, G. M., surgeon, granted leave of absence.

Rosenau, M. J., P. A. surgeon, to proceed to New Orleans for special temporary duty in connection with the investigation of the cause of yellow fever.

Stansfield, H. A., P. A. surgeon, relieved from duty on Isthmus of Panama, effective August 23.

Stansfield, H. A., P. A. surgeon, to report to the director of the Hygienic Laboratory, Washington, D. C., for duty.

Trotter, F. E., P. A. surgeon, to rejoin his station, San Francisco, Cal.

Sweet, E. A., asst.-surgeon, relieved from duty at New Orleans and directed to proceed to Fort Stanton, N. M., for duty and assignment to quarters.

McMahon, R. L., acting asst.-surgeon, granted leave of absence for thirty days from August 15.

Marsh, W. H., acting asst.-surgeon, granted leave of absence for twelve days, from September 19.

Mason, W. G., acting asst.-surgeon, granted leave of absence for nine days from September 16.

Quigley, F. L., acting asst.-surgeon, granted leave of absence for seven days, from September 4, under paragraph 210 of the regulations.

Rodman, J. C., acting asst.-surgeon, granted leave of absence for one and one-half days, from September 13.

Safford, M. V., acting asst.-surgeon, granted leave of absence for three days, from August 29, under paragraph 210 of the regulations.

Sill, R. H., acting asst.-surgeon, granted leave of absence for seven days, from September 30, under paragraph 210 of the regulations.

Walerius, M., pharmacist, granted leave of absence for seven days from September 2, under paragraph 210 of the regulations

Society Proceedings

COMING MEETINGS.

American Public Health Association, Boston, September 25-29

Medical Society of the State of Pennsylvania, Scranton, September 26-28.

Association of Military Surgeons of the United States, Detroit, Mich., September 26-28.

American Roentgen Ray Society, Baltimore, September 28-30.

Colorado State Medical Society, Colorado Springs, October 3-5.

American Association of Railway Surgeons, Chicago, October 4-6.

Idaho State Medical Society, Boise, October 5 6.

Delaware State Medical Society, Wilmington, October 10.

Mississippi Valley Medical Association, Indianapolis, October 10-12.

Vermont State Medical Society, Burlington, October 12-13.

New York State Medical Association, New York City, October 16 19.

Kentucky State Medical Association, Louisville, Oct. 18-20.

AMERICAN ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY.

Tenth Annual Meeting, held at Buffalo, N. Y., Sept. 14-16, 1905.

Under the Presidency of Dr. Hanau W. Loeb, St. Louis.

Officers.

The following officers were elected: President, Dr. Casey A. Wood, Chicago; vice-presidents, Drs. J. A. Stucky, Lexington, Ky.; Alvin A. Hubbell, Buffalo, N. Y., and Emil Mayer, New York; secretary, Dr. George F. Suker, Chicago (re-elected); treasurer, Dr. Otto J. Stein, Chicago (re-elected).

The place of next meeting will be decided by the council.

An address of welcome was delivered by Dr. Walter D. Greene, commissioner of health of Buffalo, which was responded to by the president.

President's Address.

President Loeb, after referring to the rapid rise of specialism, its divisions and subdivisions, devoted the rest of his remarks to the medicolegal aspects of certain cases of diseases and injuries and complications of the nose, throat and ear. The physician is called on to give his opinion and advice in certain cases as an expert in court. There are essential differences between the testimony of experts and that of ordinary witnesses. Fractures of the nose or involvement of the accessory sinuses may be the bone of contention in court. He cited several cases in point.

Vice-president's Address.

Dr. Derrick T. Vail, Cincinnati, first vice-president, spoke of the medicolegal aspects of ophthalmologic cases, and said that expert testimony implied an accurate and detailed knowledge of the science of ophthalmology coupled with abundant practical experience, and a complete understanding of the plaintiff's condition. He cautioned against examining patients cursorily, as this may lead to a wrong diagnosis. Illustrative cases were cited. Every tissue and organ of the body should be carefully examined before expert testimony is given in court in regard to a given case. Cases of simulation call for great skill on the part of the oculist. He pointed out and emphasized the importance of the expert using simple language in court. Answers to questions should be short, pointed and given in understandable English at all times, if possible.

(To be continued.)

MEDICAL SOCIETY OF THE MISSOURI VALLEY.

Annual Meeting, held in Council Bluffs, Iowa, Aug. 24-25, 1905.

The President, Dr. S. Grover Burnett, Kansas City, in the Chair.

Dr. S. Grover Burnett, in his presidential address, entitled "Oslerism Bearded, or a Study of Age in Relation to Work," called attention to the fact that Dr. George M. Beard was entitled to priority in suggesting the uselessness of men above 40 years of age. Papers were read by Drs. Leroy Crummer, A. C. Stokes, W. O. Bridges, A. P. Condon and J. P. Lord, of Omaha; Fenton B. Turck and W. F. Waugh, of Chicago; Daniel Morton, St. Joseph; J. W. Kime, Fort Dodge, Iowa; Herman E. Pearse and C. H. Hardin, of Kansas City; T. M. Bogart, of Excelsior Springs, Mo.

On Thursday evening the society was entertained by the local profession at Lake Manawa.

An amendment to the constitution was read, changing the annual meeting to the first Thursday in September.

The secretary's report showed a healthy condition of the society, 41 new members having been added during the year.

The Buchanan County Medical Society extended an invitation to hold the next semi-annual meeting in St. Joseph in March, 1906, which was accepted.

Election.

The election of officers for the ensuing year resulted as follows: President, Dr. John E. Summers, Jr., Omaha; vice-presidents, Drs. C. H. DeWitt, Glenwood, Iowa, and C. B. Hardin, Kansas City, Mo.; treasurer, Dr. Donald Macrae, Council Bluffs (re-elected); secretary, Dr. Charles Wood Fassett, St. Joseph, Mo. (re-elected).

Therapeutics

[It is the aim of this department to aid the general practitioner by giving practical prescriptions and, in brief, methods of treatment for the diseases seen especially in every-day practice. Proper inquiries concerning general formulae and outlines of treatment are answered in these columns.]

Burns.

Van Zandt, in *Amer. Pract. and News*, states that nervous shock is the chief cause of death following burns if it occurs early. If the patient survives the first stage general intoxication is the chief factor, or death may occur from an intercurrent disease such as pneumonia, Bright's disease, erysipelas, pyemia, etc. A burn is a wound and demands as careful attention as a wound from any other cause, and the earlier a burn is dressed the better will be the results.

The alleviation of pain is the first thing to be given attention. In burns of the first degree, according to the author, this is best accomplished by dusting the parts with some alkaline powder or by lead water compresses or collodion dressing. If the burn is of the second or third degree it becomes a more serious proposition. Therefore, in selecting a dressing for burns two principles must be considered: The agent must cause no irritation and it must be antiseptic. After cleansing the surrounding skin and irrigating it with a 1 to 1,000 bichlorid solution or a 3 per cent. carbolized solution, the surface should be syringed with a solution of hydrogen peroxid (one part to six of water). The dangers from the use of poisonous antiseptics must be kept in mind. When the burn is extensive this author recommends dressing it by applying strips of rubber tissue one-half inch wide all over the surface of the injured area and extending well over the edges to the sound skin, and over this sterilized gauze and a bandage. When granulations are well started skin grafting is recommended.

In extensive burns the water bath of Hebra is advised, as it does away with the pain of changing dressings.

In burns of limited extent a protective dressing with carron oil, olive oil, white of egg, ichthyol (2 per cent.), resorcin, applied on pieces of sterilized gauze, is recommended.

Picric acid is also mentioned as of service in different strengths, applied early in the disease before granulation begins. It is said to deaden the pain. The author, however, prefers the following combination for burns of any degree:

℞. Aluminis .... ℥i 30|
Acidi carbol..................... ʒi 4|
Ichthyol .... ʒiiss 10|
Liq. petrolati q. s. ad.............. ℥vi 180|
M. Ft. unguentum. Sig.: Apply locally.

[The foregoing is put in prescription form on the author's statement that he uses alum 15 per cent., carbolic acid 2 per cent., and ichthyol 5 per cent., in liquid petroleum as a base.]

In any case the author advises against dressing the wound too frequently unless there are special indications for it. He is opposed to dusting powders of any sort when the burn is beyond the first degree, because they are irritant in their action and tend to increase the amount of the discharge. The granulations forming over the burned areas must be protected and a perfectly healed wound will be the result, and there will be no deformity from the scar and no loss of function from contraction. The constitutional treatment consists of supporting measures and analgesics if required.

Meyers claims that it is bad surgery to cleanse any burn unless it contain sawdust. By scrubbing a burn the clots which have formed are removed and the wound then presents a good field for infection.

Block recommends a saturated solution of picric acid on cotton as a local application and close observation of the kidneys.

The following combinations are recommended by other authorities for local applications in the treatment of burns:

In burns of the first degree:

℞. Acidi carbol..................... ʒss 2|
Olei lini
Aquæ calcis, ãã.................. ℥iv 120|
M. Sig.: Shake well and apply on lint. Or:

℞. Acidi picrici..................... ʒss 2|
Alcoholis .... ℥i 30|
Aquæ dest. .... ℥xii 360|
M. Ft. solutio. Sig.: Bathe the parts well with the solution, and follow it by an application of the solution on cotton. Or:

℞. Ext. opii..................... gr. viiss |50
Ichthyoli .... ʒiv 15|
Liq. petrolati
Lanolini, ãã..................... ʒvi 24|
M. Sig.: Apply locally on gauze in burns of the first degree.

In burns of the third degree *Merck's Archives* recommends the following:

℞. Ichthyoli .... m. xlv 3|
Olei olivæ .... ʒii 8|
Lanolini .... ℥iii 90|
M. Sig.: Apply locally. Or:

℞. Olei amygdalæ exp.
Aquæ calcis
Lanolini, ãã .... ℥iii 90|
M. Sig.: Apply for two days, two or three times daily, and follow with:

℞. Aquæ plumbi .... ʒv 20|
Liq. petrolati .... ʒiv 15|
Lanolini .... ʒi 4|
M. Sig.: Apply freely once daily.

In cases accompanied by excessive pain the following is recommended:

℞. Cocainæ hydrochlor..................... gr. x |65
Liq. petrolati .... ʒiii 12|
Lanolini .... ʒii 8|
Aquæ dest. .... ʒv 20|
M. Sig.: Apply freely on the painful surface.

Iron Acetate in Pneumonia.

Robson, in *British Med. Jour.*, recommends the following combination, containing the acetate of iron, in the treatment of pneumonia:

℞. Liq. ferri chloridi..................... m. xv 1|
Liq. ammon. acetatis..................... ʒii 8|
Aq. chloroformi .... ℥ss 15|
M. Sig.: One such dose every four hours in water.

It may be given alternately every six hours with a mixture containing strychnia, as follows:

℞. Liq. strychniæ (1 per cent.)............ m. v |30
Aq. chloroformi .... ℥ss 15|
M. Ft. mistura. Sig.: One such dose every six hours.

The foregoing treatment should be kept up until the crisis has passed. He does not recommend quinin or antipyretics, and seldom prescribes digitalis. He recommends the treatment above outlined in severe cases of bronchopneumonia occurring in infants and children, and in catarrhal and lobar pneumonia occurring in debilitated patients.

Delirium Tremens.

In cases of delirium tremens, when the patient has reached the stage of alcoholic indulgence characterized by insomnia, great excitability and inability to retain food, the *Medico-Chirurg. Jour.* recommends that an active cathartic similar to the following be administered:

℞. Pulv. jalapæ co..................... gr. x |65
Hydrarg. chloridi mitis
Sodii bicarb., ãã..................... gr. v |30
M. Chart. No. i. Sig.: To be taken at one dose.

Should the heart show any signs of weakness the following is recommended:

℞. Tinct. capsici
Tinct. digitalis, ãã..................... ʒiv 15|
Tinct. nucis vom..................... ʒii 8|
Spts. ammon. arom. q. s. ad.......... ℥iii 90|
M. Sig.: One teaspoonful in water every four hours.

In cases of extreme nervousness accompanied by insomnia, sedatives will be required, and in extreme cases a hypodermic of morphin.

Hyperidrosis.

The following combinations after Unna are recommended by the *N. Y. Med. Jour.* in the treatment of hyperidrosis:

Wash the affected parts with spirits of camphor or with weak solutions of vinegar and follow it with a local application similar to the following:

℞. Ichthyoli
Spts. terebinthinæ, ãã..................... ʒv 20|
Ung. zinci oxidi .... ʒx 40|
M. Ft. unguentum. Sig.: Apply locally on retiring.

In the shoes the following may be sprinkled:

℞. Pulv. sinapis .... ʒi 4|
Pulv. talci..................... ℥iv 120|
M. Ft. pulvis. Sig.: To be dusted in the shoes.

When the hands alone are affected a half-teaspoonful of the following may be thoroughly rubbed into the hands after washing them:

℞. Tinct. belladonnæ..................... ℥ss 15|
Spiritus oderatus .... ℥iii 90|
M. Sig.: One-half teaspoonful to be rubbed into the hands two or three times a day.

Medicolegal

Immaterial Consultations of Physicians.—The First Appellate Division of the Supreme Court of New York says that the applicant for the life insurance sued for in the case of Valentini vs. Metropolitan Life Insurance Company stated that a certain physician was the one who last attended him, in 1898, for rheumatism, and that he had not been under the care of his physician within two years, unless as stated in previous line. His mother was named as beneficiary. And the consultation of another physician by the mother without the knowledge of the son, or a consultation with his knowledge when he was not suffering from any ailment or disease, the court holds, would not constitute either of his answers a breach of warranty. Again, the court says that it was manifest that a breach of warranty was not established as a matter of law. Assuming that the attendance of the other physician was within two years of the time when the answers were given, yet it was not made to appear that the assured was afflicted with any disease which called for medical attendance, or that it was other or different than a mere fear engendered in the mind of the mother that the son was in need of some medical attendance. It was made affirmatively to appear that the trouble at the most was a slight nervous twitching, which did not interfere with the physical vigor of the insured, or with his ability to attend to his business. The purpose of the question and answer was to inform the company as to the physical condition of the applicant and his probable duration of life and before the court is justified in holding that there is a breach of warranty it must appear that attendance by a physician had been for some substantial disorder, and not for a mere functional and temporary indisposition. This the evidence failed to establish, and the court was not, therefore, justified in determining the question as matter of law.

A Supreme Court on a Low Age of Consent.—The Supreme Court of Mississippi takes occasion, as it says, in Dickey vs. State, to express its opinion concerning the wisdom and justice of the conclusive presumption of law (as apparently at present in that state) that a female child over the age of 10 years has sufficient intelligence and discretion to consent to the surrender of her virtue and the defilement of her person. Every child under 14, the court declares, is presumed by the law to be incapax doli (that is, mentally incapable of entertaining a criminal intent), because presumed not to have developed sufficient intelligence and moral perception to distinguish between right and wrong and to comprehend the consequences of his act. And hence no child under 14 can be punished for any crime except on proof of exceptional intelligence and maturity. And yet, while this is true, and while it is further true that a female child less than 10 years old, by so much as a day, is conclusively presumed incapable of consenting to sexual commerce, a female child over 10, by so much as a day, is conclusively presumed capable of consenting to the sacrifice of her virginity, her social undoing and her moral ruin. This, the court supposes, by analogy, is because she is presumed to have sufficient intelligence and moral discrimination to distinguish between right and wrong, and to comprehend the ruinous consequences of the act. This presumption is inconsistent with the presumption of incapacity to commit crime, and in irreconcilable conflict with the truth, and is an insult to our intelligence. We all know that the overwhelming majority of the girls of this state under 14 years of age, in their ignorance and innocence, do not and can not have any adequate understanding of sexual commerce, nor any comprehension of the ruinous consequences of a lapse from virtue. The legal presumption which declares that every female over 10 years of age is fully capable of giving intelligent assent to her own ruin, and which, therefore, make her fair play for any lecherous scoundrel who can impose on her innocence and credulity, is a reproach to the law, a disgrace to a Christian state, and a blot on the civilization of the age. The girls of the state under 14 should be protected by a legal presumption that they are incapable of consenting to their own shame. This presumption might be made either prima facie or conclusive. If prima facie, it might be allowed to be rebutted on proof of exceptional intelligence and maturity. If conclusive, the penalty might, in the discretion of the trial court, be made either death, imprisonment for life, or imprisonment for a term. In this way, without injustice to any one, our daughters could be protected by the law until such time as they could reasonably be presumed to have sufficient discretion to protect themselves against the machinations of the seducer.

Physician Competent to Give Certain Opinion Evidence.—The Supreme Court of New Mexico says, in Miera vs. Territory, that opinion evidence is not, in its nature, so distinct from and inferior to what is usually termed direct evidence as it is, perhaps, commonly assumed to be. In the last analysis all testimony may fairly be termed opinion evidence, and the court may properly act on the familiar principle that the best evidence should be offered. Unquestionably, in many cases so-called opinion evidence would be more helpful than any direct testimony obtainable. and that for two reasons: First. It may be the testimony of one to whose sight, hearing or other senses has been presented that which can not be reproduced to the jury. It is said in opposition to the admission of such testimony that the facts should be stated to the jury, and the opinion formed by it. But not even the great masters of literature have been able to put in words precisely what they saw, still less what was apprehended by their other senses. In recognition of this truism courts have permitted witnesses to state their opinions with regard to sounds, their character, from what they proceed, and the direction from which they seem to come; as to resemblance of foot tracks; whether a person's conduct was insulting; and where noisome odors render a dwelling uncomfortable, etc. Second. The opinion may be that of a person qualified by study or experience, or both, to understand and explain the subject under consideration, commonly termed an "expert." The opinions of such witnesses are taken in all courts on a great variety of subjects, but not usually on the question whether death was self-inflicted. In State vs. Lee, 65 Conn. 265 (1894), however, and in Commonwealth vs. Leach, 156 Mass. 99, the testimony of a physician was admitted on that point; but in each of those instances the wound testified of was in the uterus, to procure abortion, and it might be said that if it had been an outward wound, open to common observation, the testimony would have been rejected. That objection, it seems to this court, goes to the weight, and not to the admissibility, of such testimony. Physicians have been allowed to testify that sexual intercourse was highly improbable, if not impossible, between a man and a woman in a buggy, which was described to the jury (People vs. Clark, 33 Mich. 1122); that such intercourse by force was impossible with a woman seated in a rocking chair, which was shown to the jury (State vs. Perry, 41 W. Va. 641); and that it was impossible in a winding stairway, which was described to the jury (McMurrin vs. Rigby, 80 Iowa, 322). Certainly it can not be claimed that wounds causing death are more a matter of common knowledge than the act to which the human race owes its continuance. In 41 W. Va. the admission of the testimony in question was put expressly, and in the other cases impliedly, on the ground that the witnesses "had made the human system, including its joints and organs, the subject of peculiar study, such as a jury would be unable to give in the short time allowed them in the examination of the evidence, and thus [could] assist them in arriving at a just conclusion." Precisely that kind of research would qualify one to determine better than an ordinary person could do whether a wound could have been self-inflicted. And this court holds that an experienced physician, who held an inquest on the body of the woman with whose murder the defendant was charged, was properly permitted to testify that, in his opinion, she could not have inflicted on herself the wound of which she died, and that she was sitting down when the shot was fired. To exclude such testimony, it says, is to hold that the opinion of a jury, based on evidence necessarily incomplete, is preferable to that of a man of learning and experience, who has seen and touched that of which he speaks. The value of the physician's opinion was for the jury to determine. If it preferred to form and adopt an opinion of its own on the other evidence given it was at liberty to do so.

Current Medical Literature

AMERICAN.

Titles marked with an asterisk (*) are abstracted below.

American Medicine, Philadelphia.

September 9.

1 *Cases [illegible] ulties in Abdominal Diagnosis [illegible] lphia.
2 *Deforn [illegible] G. G. Davis, Philadelphia.
3 Therapeutic Value of the Digestive Ferments. H. W. Bettmann, Cincinnati, Ohio.
4 *Repair of the Genital Tract Following Labor. F. C. Hammond, Philadelphia.
5 *Iron Precipitates in the Blood, Spleen and Red Marrow. E. T. Williams, Boston, Mass.
6 *Technic of Pelvic Examination and the Principles of Local Pelvic Medication. E. A. Schumann, Philadelphia.
7 *Advantages of Sanatorium Treatment of Tuberculosis. F. M. Pottenger, Los Angeles, Cal.

1. **Difficulties in Abdominal Diagnosis.**—Montgomery cites the history of six cases, illustrating some of the difficulties, which may be divided into those in which the solution has to do with the existence or non-existence of pregnancy; those in which ovarian tumors may be in question; those in which doubt occurs as to the presence of a myoma, and those in which there is uncertainty as to the existence of other growths.

2. **Deformities of the Lower Extremity.**—According to Davis, the main characteristic of these deformities is weakness. This may be either a weakness affecting the constitution and tissues of the body generally, or it may be a local weakness, or it may be both combined. He divides the cases into three classes: (1) Those due to rickets; (2) those due to paralyses, and (3) those due to deformities of the feet. In these three groups are included most of the deformties of the lower extremities, their diagnosis, prognosis and treatment being considered in detail.

4. **Repair of Genital Tract Following Labor.**—Hammond emphasizes the importance of a thorough examination by inspection, with a good light, of the genital tract, as a routine measure on the termination of labor. Repair of lacerations should be done within twelve hours, if the condition of the patient permits. The technic of suturing the various lacerations is thoroughly detailed.

5. **Iron Precipitates in the Blood, Spleen and Marrow.**—Williams found iron precipitates in healthy spleens, in marrow and in healthy blood. He believes the gastric juices extract this iron from the food in the form of a chlorid, which combines with the peptones in the stomach to form a peptonoid. Thence it passes into the portal vessels and spreads through the system. A large amount of it is plainly deposited in the spleen and marrow, where it is intended to serve as pabulum for the young red blood corpuscles.

6. **Pelvic Examination and Medication.**—Schumann says that in all cases involving abdominal section or in which an accurate diagnosis is at all difficult two examinations should be made at least twenty-four hours apart. Inspection is an important and frequently neglected portion of the diagnostic technic and should not be omitted save in cases of extreme delicacy on the part of the patient. Rectal touch, particularly in the knee-chest position, is of great value in determining obscure affections of the pelvic organs. Local treatment, especially the use of the hot vaginal douche, is described at length. The douche should be given at least twice daily, morning and evening, and its administration should last perhaps a half-hour—certainly not less than fifteen minutes. The temperature of the water should be as high as may be comfortably borne by the patient. It may be increased from day to day to 100, 110, 115 and even 120 F. Its use should be continued for over a long period of time, months, and sometimes even years. Long-continued use is essential to the success of the procedure. Too long-continued use, however, of the douche in the normal vagina must never be practiced, since the washing out of the normal vagina of lactic acid bacteria, whose function is to render the vaginal secretion acid and an unfit culture medium for most pathogenic bacteria, renders the passage of such organisms to the higher pelvic organs comparatively easy.

7. **Advantages of Sanatorium Treatment of Tuberculosis.**—Pottenger believes that patients can be treated best in a sanatorium, because (1) they are under the immediate and constant guidance and control of the physician who can see that they do the things which are necessary to help bring about a cure, and prevent them from doing things which tend to lower vitality and retard progress; (2) they are furnished with apartments suitably lighted and ventilated, and with food adapted to their needs and properly prepared; (3) they can be given the advantages of all scientific measures which have proved of value in treatment. Good food, fresh air and careful guidance are the basis of treatment, but the tuberculous individual is not receiving the best that can be had until we give him the benefit of all scientific aids, and of these especially to be recommended are hydrotherapy, the chemic rays, culture products, and direct medication of the upper air tract.

Medical Record, New York.

September 9.

8 *Sciatica and Its Treatment. W. M. Leszynsky, New York.
9 *Scientific Classification of the Methods of Modifying Cow's Milk for Infant Feeding. G. R. Pisek, New York.
10 *Kernig's Sign and Its Pathogenesis. G. B. Hassin, Chicago.
11 *Mechanics of Dorsal Pott's Disease. J. C. Schapps, Butte, Mont.
12 Ear Complications of Cerebrospinal Meningitis. C. J. Colles, New York.
13 Ectopic Gestation Complicated by Mental Disturbance. F. G. Hodgson, Atlanta, Ga.
14 Eye Injuries Due to Blows from the Corks of Ginger Ale Bottles. C. Graef, New York.

8. **Treatment of Sciatica.**—Leszynsky remarks that pain in the course of the sciatic nerve is common, but that genuine sciatic neuralgia is rare. Most of the cases are really perineuritis or interstitial neuritis, while others are symptomatic of interference with nutrition by some extrinsic lesion. The causes of sciatica are exposure to cold, overfatigue of the legs, and pressure on the nerve from habitual sitting in persons whose metabolic processes are impaired by rheumatism, gout, diabetes, or alcoholism, injuries from lifting heavy weights, horseback or bicycle riding, sewing-machine work, etc. Sciatic pain occurs in diseases of all neighboring organs that are associated with compression of the sciatic nerve or sacral plexus. Such are tumors and inflammation in the pelvis, or of the spinal meninges, vertebral caries, uterine disease, pregnancy, parturition, malignant disease of rectum, hemorrhoids, hardened feces, sarcoma of femur, etc. It may result from fracture or dislocation of the thigh. It is rare from lead, mercury, or syphilis. Anemia, chlorosis, and hysteria have little influence in producing it. It may develop suddenly from exposure, or slowly when symptomatic of other diseases. The diagnosis is based on pain or tenderness over the nerve trunk, which radiates to the foot or toes, and diminution or loss of the Achilles tendon reflex. When degenerative, it is accompanied by paralysis, atrophy, vasomotor disturbances, etc. In the treatment of sciatica the first thing is the diagnosis of the cause and its removal when possible. In acute cases heat by the hot wet pack, combined with rest and fixation, and hot saline enemata, relieve pain. The bowels should always be moved by enema, and calomel given to unload the bowel and eliminate poisons. Morphin or opium suppositories are always indicated to obtain sleep at night. Massage, if gentle, is useful. Linear cauterization is of value in relieving pain, as is the ice bag at times. The continuous galvanic current in either direction is useful at the end of one week. It is more useful in mild, subacute or chronic cases. Mild cases will yield to hot packs, massage, and rectal irrigation. In subacute or chronic cases a modified rest cure is essential. Drugs are useless. Daily massage and passive movements and systematic exercises are useful. Hydrotherapy, in form of local wet pack, Scotch douche, etc., is most valuable. Static or faradic electricity in the form of the brush is useful.

9. **Methods of Modifying Milk for Infant Feeding.**—Pisek classifies the principles involved in the methods of feeding now in vogue, so as to show the effect of the use of these methods. Infants develop new functions during the suckling period, and change in form and function until the weaning period, after which growth is principally in size. The teeth in the child are absent, and the stomach is not like that of the adult. The digestive tract is developing and changing in functions, yet the

milk remains practically the same in composition throughout lactation. Hence the stomach as it develops changes the milk so as to make it suitable for its altered form and function. The digestive secretions change the milk, producing curds, and so supplying the solid constituents that are necessary to accustom the stomach to digestion of solids. A large factor in feeding is the gradual changing of diet. The proteids of colostrum are soluble. This is gradually displaced by proteids in the form of casein combined with calcium, which forms curds. The first secretion of the stomach is rennet ferment, which produces paracasein, a compound unaffected by pepsin. A small amount of acid secreted will produce free paracasein curd, which is digestible by pepsin. This is denser than the curd produced by rennet. More acid causes the free paracasein to combine with the acid and form chlorid of paracasein, digestible by pepsin. Thus the stomach may produce three solid compounds with casein of milk, having different forms and digestive properties, depending on the strength of the secretions. The author divides the methods of infant feeding into seven groups. The first group contains all methods that affect the quantitative composition of milk—dilution, with fat and sugar addition and whey and cream mixtures. To insure proper growth and development the infant needs as much tissue and energy foods as are found in human milk. The energy foods in cow's milk are in the same quantities as in human milk, but the tissue foods are in larger amounts. To reduce the quantity of proteids the milk is diluted, and to bring the energy and fat foods up to normal, sugar and fat must be added, otherwise the proteid must supply the energy. If this is not done the infant fails to gain in weight and strength as it should. If the amount of sugar is too great, as in condensed milk, the excess of energy food is converted into fat, and the child gains in weight; it is supposed to be growing, but in reality it is being stunted and deprived of its natural rights, for proteids are needed for true growths, as well as mineral salts for the bones. Whey feeding, with casein removed, can be used only temporarily, as it supplies no solid matter for the stomach to act on. The second group includes methods that inhibit rennet action and formation of curds by the use of alkalies. The normal reaction of mother's milk has been found to be acid. The alkalies prevent the formation of curd in the presence of soluble lime salts. The alkali is always in excess of the amount necessary to neutralize acidity. The effect of any alkali prevents the rennet action and retards the action of the gastric secretions. Group three includes methods that retard rennet action and neutralize the acid of the gastric juice. Here basic compounds are formed with the casein, and all gastric digestion is prevented. Enough alkali is used to neutralize sour milk. Group four consists of methods which precipitate casein by acids. If sufficient acid is present it combines with the free casein and produces an insoluble precipitate like that of sour milk. Group five includes methods that profoundly alter the character of the milk—peptonizing, adding citrate and oxalate of ammonium, potassium, or sodium. They all prevent formation of rennet curds; the milk remains fluid. Group six contains the methods that indirectly alter milk—sterilizing, Pasteurizing, boiling, etc. They prevent the action of the rennet ferment, or render it slower than normal. In group seven are placed the methods that alter the curds mechanically, as by addition of cereal gruels. The gelatinized starch of the gruel makes the curd of the milk softer and more easily digested.

10. **Kernig's Sign and Its Pathogenesis.**—Hassin draws the following conclusions regarding its causation: In Kernig's sign we have, first of all, to do with stretching of the sciatic nerve. In the healthy state this stretching seems not to produce any pathologic conditions; but in disease when the nerve itself is affected or the nerve roots are affected—which undoubtedly takes place in acute meningitis—the stretched, affected roots react correspondingly; the posterior roots by producing pain, and the motor roots by producing contraction of the corresponding muscles, in the case of the sciatic nerve, the flexor muscles. The pain arising from the stretching of the posterior roots makes the patient instinctively keep away from further stretching of the posterior roots, as it happens, for instance, in dislocations when the muscles respond with strong contraction to any active or passive movements in the dislocated joints, so that this explanation may be held, at least, as the simplest one we have for the understanding of the mechanism of Kernig's sign. The occasional occurrence of the sign in typhoid fever may be explained by the fact that the meninges are frequently affected in typhoid fever, so that the sign is due, not to the fever, but to the concomitant meningitis. Regarding other published cases in which Kernig's sign was present in the apparent absence of meningitis, it is hard to prove that in those cases the meninges were not affected, so that, commonly, Kernig's sign may be considered as a standard sign of inflammatory meningeal lesions, and as being due to irritation of the spinal roots, produced by the stretching of the sciatic nerve.

11. *Mechanics in Dorsal Pott's Disease.*—Schapps analyzes the factors concerned in the production of the deformity in dorsal Pott's disease, and lays particular stress on the sternal *protrusion. The weakest point is the front of the chest, and* without the sternal protrusion the spinal deformity can not possibly take place. During the earlier stages of the disease, *treatment in the recumbent position* by some such apparatus as the Bradford frame is necessary, and the best and quickest results are obtained by treating the spine with the same gentleness as if it were fractured or otherwise acutely affected. The upright position should be deferred until the acute stage has passed, and the change should be a gradual and careful experiment. Schapps points out the mechanical defects of the ordinary apparatus designed for use by these patients, and says that it is a fallacy to suppose that the spine can be fixed by a brace attached to the back. Other fallacies are belief in the efficiency of spinal leverage and the means of securing vertical relief. He then describes and illustrates his own form of apparatus, which consists of a set of anterior pelvic and pectoral supports designed to be attached to a Taylor back brace in such a way as to support the chest as well as the back. This he considers superior to the plaster jacket or its modifications in regard to both efficiency and cleanliness, while it is also adaptable for use in cases of cervical or high dorsal disease.

Medical News, New York.

September 9.

15 *Recognition and Treatment of Pancreatic Inflammation. C. Beck, New York.
16 *Care of the Infant. H. P. DeForest, New York.
17 *Pneumococcus as a Factor in Hemoptysis. L. F. Flick, M. P. Ravenel, and J. W. Irwin, Philadelphia.
18 Dermoid Cysts of the Mediastinum. (Continued.) R. S. Morris, Ann Arbor, Mich.
19 The Country Practitioner. B. R. Riley, Coyville, Kans.

15. **Pancreatic Inflammation.**—Beck reviews the anatomy of the pancreas, especially its relation to the other abdominal organs, and discusses the clinical history of inflammations of that organ. He says that there is not one sign which is absolutely pathognomonic for pancreatitis. Only by carefully considering the history, the mode of the onset and the various combinations of the different symptoms can a diagnosis be made in most cases. He is convinced that pancreatitis is of much more frequent occurrence than is generally assumed, and that many cases, not only of the chronic, but also of the acute type, could be saved by surgical interference. The method of operating practiced by him is as follows: An incision is made alongside the outer margin of the rectus muscle. If a tumor was felt in the median line, the incision may reach from the xiphoid process to the umbilicus. If the rib arch proves to be in the way, Marwedel's method of resecting it may be advisable. *The further procedures* must bear an exploratory character. At first the ducts are inspected and palpated, in order to ascertain whether there be a calculus in the Wirsüngian or *the common duct, or in the papilla of Vater.* In this event, extraction of the calculus must be followed by duct drainage. If such steps are contemplated, large gauze pads must be ready to mop up the secretions as they escape. If there is a pancreatic exudation it must be discharged. During these manipulations the abdomen is frequently irrigated with hot sterile water. Beck regards the use of these simple *means* as very important in intra-abdominal operations, because they stop surface hemorrhage, permitting the surgeon to see more clearly. At the same time they *remove exudations and blood* clots in an easy, mechanical manner and eliminate, therefore,

a favorable soil for bacterial development. The repeated hot water irrigations, to a certain extent, also possess bactericidal properties. After the field is thoroughly cleaned, packing with 3 per cent. iodoform gauze is done. If the patient is in grave collapse, ether should not be given, and local anesthesia administered instead. In the subacute, or chronic form, the patient can always be given the benefit of a full general anesthesia.

16. **Care of Infant.**—Forest discusses the care of the mother during the pregnancy; the treatment of obstetric accidents; the hygiene of the infant and its nursing, and feeding during the first few days, until the milk comes.

17. **Pneumococcus as a Factor in Hemoptysis.**—Believing that the pneumococcus is the cause of hemorrhage in pulmonary tuberculosis, Flick, Ravenel and Irwin studied the ejected blood of a number of cases of hemorrhage. The pneumococcus was found present in all. In two of the cases there was a history of exposure to pneumonia in the one, and a history of exposure to another case of hemorrhage in the other. These two cases occurred in an institution in which four cases of hemorrhage occurred about the same time. The nurse who waited on the pneumonia patient came in contact with the other patients in the institution and waited on some of them.

St. Louis Medical Review.

September 2.

20 *Observations and Statistics with Regard to Cases of Variola Handled by the Health Department of St. Louis for the Years 1903-04. H. J. Scherck, St. Louis.
21 Fracture Deformities of the Lower Leg in Childhood. B. M. Ricketts, Cincinnati.

September 9.

22 Cardiac Neurosis: Necessity of Its Proper Diagnosis. G. L. Davidson, Wharton, Texas.
23 Progressive Intensification of Toxicity by Serial Injection of Septicemic Blood. W. H. Ford, St. Louis.

20. **Smallpox in St. Louis.**—During the fiscal year beginning April 1, 1903, and ending March 31, 1904, 228 cases of smallpox were sent to quarantine by the St. Louis Health Department. Of this number, 188 were white persons and 40 colored; 156 were males and 72 were females; 179 persons contracted the disease in the city, and 49 elsewhere; 199 persons had never been vaccinated, 8 had faint scars and 21 had poor marks. Only one patient died. During the year beginning April 1, 1904, and ending March 31, 1905, there were 854 cases, 110 of this number developing in quarantine. Six hundred and thirty-six were white persons; 108 colored; 433 males and 311 females; 715 persons contracted the disease in the city, and 25 elsewhere. As to the vaccinal status, 622 persons had never been vaccinated; 5 had good scars; 30 had very faint scars, and 83 had poor marks. Eighty-seven patients died, a mortality percentage of 11.3. The scars in those who had previously been vaccinated ranged in age from fifteen to fifty years. In regard to the contagiousness of the disease, Scherck states that he does not believe that it can be carried by means of a third party who simply comes in contact with the patient. It had been the experience of the St. Louis Health Department that not a single case can be attributed to contagion carried by physicians, fumigators or others. Furthermore, Scherck does not believe that even those susceptible to the disease can contract it by visiting the rooms recently emptied of smallpox cases. Actual contact with the disease is the only source of contagion. He has also observed that at a certain distance from the patient the poison seems to be so much attenuated that it does not convey contagion. He has noticed that, even in tenement districts, where families live very close to the patient, they have not contracted the disease, while momentary actual contact with the patient has produced the disease at the end of the proper incubation period. He urges that a determined effort should be made by all health officers throughout this country to the end that a compulsory vaccination law shall be enacted for the purpose of stamping out the disease.

New York Medical Journal.

September 9.

24 Surgery at the Dawn of the Nineteenth Century. N. Jacobson, Syracuse, N. Y.
25 Study of Masked Rheumatism. G. F. Souwers, Germantown, Pa.
26 Relative Frequency of a [illegible] inus and Its Bearing on the Choice o[illegible] l Opening of the Middle Ear Cavities [illegible] of Anatomic Specimens. E. Amberg, Detroit.
27 Six Lectures on Disease of the Blood. (Concluded.) J. M. Swan, Philadelphia.
28 Death Rate of Infants in the Summer Months. F. L. Wachenheim, New York.
29 Hot Air Treatment of Acutely Inflamed Joints. W. R. Thomson, New York.
30 Prophylaxis in Tuberculosis. C. D. Alton, Hartford, Conn.

Lancet-Clinic, Cincinnati, Ohio.

September 9.

31 Education and the Hygiene of the Nervous System. (Concluded.) H. H. Hoppe, Cincinnati.
32 Masked Epilepsy. W. B. Fletcher, Indianapolis, Ind.
33 Operative Treatment of Laryngeal Tuberculosis. K. K. Wheelock, Ft. Wayne, Ind.
34 Treatment of Typhoid Fever with Castor Oil. C. C. Bass, Columbia, Miss.

American Journal of Obstetrics, New York.

September.

35 Toxemia of Pregnancy with Vomiting. E. McDonald, New York.
36 Treatment of Eclampsia. F. S. Newell, Boston, Mass.
37 *Eclampsia. C. A. Kirkley, Toledo, Ohio.
38 *Infantile Uterus and Its Treatment, with a New Operation for Anteflexion and Stenosis of the Internal Os. G. W. Barrett, Chicago.
39 *Mortality of Operations, Other than Strumectomy in Cases of Exophthalmic Goiter, with Special Reference to Gynecologic Operations. B. C. Hirst, Philadelphia.
40 *Mortality in Operations on Fibroid Tumors of the Uterus. J. M. Baldy, Philadelphia.
41 Viardel's Treatise on Obstetrics. C. G. Cumston, Boston, Mass.
42 Postpartum Hemorrhage. J. T. Johnson, Washington, D. C.
43 *Alexander's Operation Through the Median Incision. K. F. M. Sandberg, Chicago.
43½ Sexual Frigidity in Women. G. Kolischer, Chicago.

37. See abstract in The Journal, June 17, 1905, page 1957.

38. **New Operation for Anteflexion.**—Barrett describes a new method of hysteroplasty which he has been using for the correction of anteflexion and constriction at the internal os, whether muscular, fibrous or membranous, as follows: The uterus is first dilated, and, if necessary, curetted, and should great elongation of the cervix exist, the cervix is amputated. The abdomen is then opened in the median line, and the uterus is brought up and held with a tenaculum placed just above the flexion at the internal os. A longitudinal incision is now made over the internal os, its length corresponding with the extent that the posterior wall needs shortening in order to straighten the uterus. The author's tenaculum forceps is used to change this longitudinal slit into a transverse one, broadening the cervix, the length of the slit, and shortening the posterior walls to the same extent. A median suture is placed while the forceps holds the incision transversely, and at the same time holds the uterus up. The forceps is then removed and one or two sutures are placed on each side of the median suture as needed. This procedure allows the cut ends of the circular fibers to be displaced to the side so that they are from 1.5 to 2 cm. apart, outside measurement. The circumference of the uterus is thus materially increased, and the constriction obliterated. The incision may be carried as deep into the cervical tissue as may be desired, into the canal, in fact, if a membranous stricture exists. The incision, however, grows shorter as it goes inward toward the canal. In the absence of other pelvic lesions, and in cases with a sufficiently roomy vagina, the vaginal route might be chosen.

39 and 40. Id.—See The Journal, June 17, 1905, p. 1956.

43. **Modified Alexander Operation.**—Sandberg has devised a modification of Alexander's operation, to be employed in cases of retrodisplacement of the uterus complicated with prolapse of more than a moderate degree. An incision is made in the median line, above the pubis, three or four inches long, down to the fascia. The skin and adipose tissue are then, by blunt instruments, dissected loose from the fascia on the one side until the external ring of the inguinal canal is exposed. The flap of skin and adipose tissue being held aside by two blunt retractors, the round ligament is picked up, freed in the usual way, and secured by a strip of gauze. The same procedure is repeated on the other side. The abdomen is now opened in the median line, and intra-abdominal work carried out in the usual way. In case of prolapse of more than a moderate degree, the sacrouterine ligaments are shortened. This accomplished, the fundus of the uterus is brought well forward, the round ligaments are pulled out through the inguinal canal, and

the effect on the uterus is ascertained. The deeper layers of the abdominal incision, peritoneum, muscle and fascia are now sutured, the peritoneum by interrupted or continuous catgut sutures, the fascia by interrupted figure-of-eight silk sutures. After this the round ligaments are pulled out to the extent indicated by the previous test and fastened by silk sutures, four on each side, of which three are carried through the aponeurosis of the external oblique muscle and the round ligament, the fourth one securing the ligament to the fascia over the pubic bone. The skin and adipose tissue are then united by means of sutures or adhesive plaster strips, but leaving the wound open enough for free drainage. The advantages of the method are: 1. There is only one incision. 2. That this is located where it gives the best access for examination of the pelvic organs and for work in the pelvic cavity. 3. One opens the abdomen for exploration with much less hesitancy when all work can be accomplished through the same incision, and many of the causes of failure of the Alexander operation may be ascertained and avoided by an exploratory opening of the abdomen. 4. The intra-abdominal work is limited as much as possible, stitching of the uterus or the round ligaments intra-abdominally being avoided. 5. It leaves no adhesions or bands between the abdominal wall and the uterus to interfere with the expansion of the bladder, or growth of the uterus in pregnancy, or to cause obstruction of the bowels. 6. The intra-abdominal relations are left in a condition most closely resembling the normal. 7. The part of the round ligaments retained is the thickest and strongest.

American Journal of Medical Sciences, Philadelphia.

September.

44 *Hematemesis from Gastric Ulcer. W. G. Thompson, New York.
45 Angioneurotic Edema. R. S. Morris, Ann Arbor, Mich.
46 *Examination of the Blood in Pulmonary Tuberculosis, with Special Reference to Prognosis. J. T. Ullom and F. A. Craig, Philadelphia.
47 *Rest in the Treatment of Laryngeal and Pulmonary Tuberculosis. W. P. Porcher, Charleston, S. C.
48 Relation Between Anthracosis and Pulmonary Tuberculosis. J. M. Wainwright, Scranton, Pa., and H. J. Nichols, Washington, D. C.
49 *Cyanosis Retinæ. W. C. Posey, Philadelphia.
50 Scarlatinal Otitis. F. B. Sprague, Providence, R. I.
51 *Causes of Gallstones. E. Beer, New York.
52 Contribution to the Doctrine of the Morphology of the Blood, Derived from Experimental Toluylendiamine Poisoning. E. Schwalbe, Heidelberg, and J. R. Solley, New York.
53 Xerostoma. L. S. Somers, Philadelphia.
54 *Clinical Investigations of the Digestion in the Insane. D. M. Cowie, Ann Arbor, Mich., and F. A. Inch, Kalamazoo, Mich.
55 Remarks on the Nature and Classification of Insanity. T. Diller, Pittsburg.
56 *Relation Between Climate and Health, with Special Reference to American Occupation of the Philippine Islands. W. S. Washburn, P. I.

44. Hematemesis from Gastric Ulcer.—Thompson studied about 200 cases of gastric ulcer with hematemesis with a view of formulating the indications for operation. The most interesting feature of these cases was the fact that considerably more than one-half of the patients were discharged as cured after serious hematemesis, which occurred either immediately before admission or during the patients' stay in the hospital, or both. The total deaths, numbering 41, present a ratio of one death to 4.8 cases. Included in the deaths which took place among the patients not operated on were several in which the ulcer was not the whole cause; thus 6 patients died from pneumonia, 1 with abscess of the pancreas, 1 with pyonephrosis, 1 with pyopneumothorax and 3 with a subphrenic abscess. One patient had a gastroureteral fistula. In 8 of the patients not operated on and in 3 of the 20 who were operated on, death occurred from the immediate effects of hemorrhage into the stomach, which at autopsy was found filled with blood. In one case, for example, the patient lost 80 ounces of blood, by actual measurement, during the three days that she was in the hospital prior to the operation. Twenty patients were transferred to the surgical division of the hospital for operation; of these 14 died and 6 were discharged as "cured." Of the 14 fatal cases 4 presented a septic peritonitis from perforation and were nearly moribund at the time of operation. Another, as stated above, was moribund from hemorrhage, a sixth was found to have a perforated duodenal (not gastric) ulcer, and a seventh proved fatal on the thirteenth day, a recent perforation having been disclosed at operation. None of these 7 cases, says Thompson, should, therefore, be considered as having any real bearing on the operative treatment of gastric ulcer, for they all presented a forlorn hope, 2 patients dying on the table and 4 within twenty-four hours. It appears that among the 20 patients operated on, the medical diagnosis was erroneous five times, there being 1 case of tuberculosis of the stomach, 1 of perforating duodenal ulcer, and 3 in which no ulcer was discoverable. From a further analysis of these 195 cases it appears that operative measures can rarely be relied on for the cure of active hematemesis, and that also in many cases operation was delayed until the conditions present were too serious to admit of recovery. When successful results are to be anticipated they are to be looked for in the category of cases with adhesions, cicatrices and stenosis chiefly, and in operations such as gastroenterostomy, performed between rather than during, attacks of hematemesis.

46. Blood in Pulmonary Tuberculosis.—Ullom and Craig examined the blood in 39 cases of pulmonary tuberculosis with the view of getting information with reference to the value of the blood findings in such cases from a prognostic standpoint. They found that in pulmonary tuberculosis, without cavity formation, a mild anemia, with a decrease in erythrocytes and a relatively greater decrease in hemoglobin, is constant. From the standpoint of prognosis, an increase of the erythrocytes, in cases without cavity formation, is of favorable significance. In advanced cases a decrease of the leucocytes is of unfavorable import. They received the impression that the actual increase of lymphocytes seems to correspond to the increase of resistance on the part of the organism to the tuberculous infection. The transitionals seem to follow the same rule as the lymphocytes in this regard. At the beginning of the investigation the eosinophiles seemed to increase with the patient's improvement, but further study did not support this view.

47. Rest in Laryngeal and Pulmonary Tuberculosis.—The great benefit derived from the non-use of the voice, says Porcher, is so striking that no one can fail to appreciate it who watches the progress of the case. It is not alone in cases of laryngeal tuberculosis that complete rest of the larynx and pharynx is indicated. In ordinary pulmonary cases efforts to phonate excite hypersecretion and contraction of the laryngeal muscles. Complete cessation of phonation, therefore, will lessen the amount of cough and consequent prostration, hyperpyrexia, etc. Rest, either partial or complete, should be paramount in all these cases.

49. Cyanosis Retinae.—Posey reviews the literature on this subject and cites a case seen by one of his assistants.

51. Causes of Gallstones.—The results of investigations made with the view of determining the causation of gallstones are detailed by Beer. He collected 12 cases at autopsy in which there had been common duct obstruction for more than four or five weeks and in which a more or less severe inflammation of the extrahepatic and intrahepatic ducts had developed. In 7 of these cases the common duct was obstructed by calculi, and in 5 by tumors of various kinds. In the first series of 7 cases, as a result of the conditions of the experiments, stones formed in the liver ducts. In the second series of 5 cases, though apparently the same conditions were present, no stones developed, though stagnation of bile and inflammation of the mucous membrane of the bile passages were present. Beer suggests that a faulty hepatic metabolism underlies the formation of gallstones. His investigations show that Naunyn's stagnation of bile, plus inflammation of the bile passage mucosa do not seem to be sufficient by themselves to lead to gallstone formation, even though the time allowed for the working of the causes be adequate. His first series of cases shows that these two factors lead to stone formation in patients who previously had gallstones.

54. Digestion in the Insane.—Cowie and Inch record the results of a series of investigations on the work of the digestive glands in the insane conducted at one of the Michigan asylums for the insane. Their conclusions are as follows: In states of mental depression (melancholia) hyperacidity is the rule, occurring in 71.4 per cent. of von Noorden's 14 cases, 81.8 per cent. of their 22 cases, or in 77.7 per cent. of all cases (3 in number). Males and females are equally affected. This hyperacidity is due to a true hyperchlorhydria. Hyper-total acidity also occurred in their cases, and in this respect they correspond exactly with those reported by von Noorden. The hyperchlorhydria is of moderate degree, is fairly constant, and is associated with increased power and rapid evacuation. The increased secretion is due to the neurosis or psychosis and not to proliferative changes in the glands, as is evidenced by the presence of increased secretion associated with degenerative changes in the glandular elements, and of the entire mucosa. The evacuation of the stomach is usually normal or somewhat hastened after the Ewald test breakfast, while after the large stimulus of the Riegel meal and the ordinary asylum meal it is more frequently hastened. In the cases showing hyperchlorhydria the peptic value is never below normal and is frequently increased. Many of the insane suffer from various forms of gastrointestinal disease. These conditions are very frequently overlooked, probably because complaints and delusions of the digestive tracts are so common in these patients. Experience and the results of this investigation prompt Cowie and Inch to urge the absolute necessity for systematic routine examination of all the secretions and functions of the body in these patients, including what is often a very difficult task, the examination of the stomach contents. The signs of disease in the insane are almost wholly objective, and here more than in normal mental states it is essential that every modern method of value should be exhausted in order to arrive at a complete diagnosis of the case. Cancer and ulcer of the stomach may thus often be recognized in its incipiency. Chronic gastritis in its several forms, as well as the painful neuroses, will also often be encountered. If proper treatment be instituted it is not at all improbable that the mental symptoms in these cases will proportionately decrease.

56. Relation Between Climate and Health.—Washburn discusses the relation between climatic conditions and health, with special reference to Americans in the Philippine Islands. He says that with respect to the principal climatologic factors, temperature, humidity and atmospheric movements, the climate of the Philippine archipelago is not extreme, as it is distinctly insular in character, the greater portion of the land area being not far distant from the ocean. There are other modifying influences which obtain in portions of the archipelago, such as general oceanic and local inter-island currents, prevailing winds, elevation, the state of cultivation and drainage of soil, and the presence of forests and other plant life. Excluding localities in the tropics characterized by excessive heat, high relative humidity or unhealthful soil conditions, acclimation or physiologic adaptation of the white man to tropical environment is possible. Failures of the white race to live in the tropics and to maintain health, excluding localities indicated in the second conclusion, appear to have been due principally to non-observance of the rules of personal, domestic and public hygiene. As a rule, Americans appear to become acclimated in the Philippines during the third year of residence. With sanitary surroundings, and by observing the rules of personal and domestic hygiene, residence of Americans in the Philippine Islands appears to be attended with as little danger of disease and death as residence in the United States under similar sanitary conditions.

Annals of Ophthalmology, St. Louis, Mo.

July.

57 *Corneal Cyst. M. Frank, Chicago.
58 Technic of Implanting Thiersch Epidermis Grafts in the Operation for Symblepharon. F. C. Hotz, Chicago.
59 Congenital Paralysis of the Abducens of One Eye with Convergent Squint of the Other. V. L. Rala, Providence, R. I.
60 Two Cases of Spasmus Nutans. M. Buchanan, Philadelphia.
61 Ptosis and Operation of Motais. H. D. Bruns, New Orleans.
62 Case of Keratitis Nodosa. O. Wilkinson, Washington, D. C.
63 Ablepharia Partialis of Upper Eyelids. L. W. Fox, Philadelphia.
64 Proof of the Existence of Amblyopia Ex Anopsia in Strabismus. W. B. Johnson, Paterson, N. J.
65 *Operation for Entropion and Trichiasis by a New Method. S. Lagleyze, Buenos Ayres.
66 Radium in Trachoma. J. C. Beck, Chicago.
67 Hysterical Blindness—Its Treatment. A. D. Williams, St. Louis.
68 Eye-Strain. E. H. Hazen, Des Moines, Iowa.
69 Etiology of Astigmatism. G. M. Gould, Philadelphia.
70 Intraocular Infection of Endogenous or Metastatic Origin. J. Terson, Toulouse.
71 Accident with Adrenalin. D. De Beck, Seattle, Wash.
72 Memorial Volume to Julius Hirschberg, on the Twenty-fifth Anniversary of His Professorship in the University of Berlin, translated by C. Loeb, St. Louis.

57. Corneal Cyst.—Frank relates a case of corneal cyst in which there was no history of trauma or previous inflammation of the cornea. The patient had noticed the growth for fifteen years. It was situated at the apex of a pterygium, on the nasal side of the right cornea. The cyst measured 3 mm. in height, 4 mm. in width, by 5 mm. in length. It was opaque, whitish in color and firm to the touch. It contained about 2 mm. of a clear, almost colorless fluid, faintly alkaline in reaction. Microscopic examination of the cyst contents showed cellular débris and a few epithelial cells. The pterygium was torn loose from the cornea with a strabismus hook, destroying the anterior cyst wall at the same time. Forming the posterior surface of the cyst was a firm, thin scale of tissue, measuring 3 by 4 mm., which had probably separated from the cornea by pressure necrosis. This was dissected out and the wound in the conjunctiva was drawn together with two sutures and the corneal area corresponding to the cyst curetted. The wound healed promptly.

65. New Operation for Entropion and Trichiasis.—For the past ten years, Lagleyze has practiced exclusively in entropion, whether of the upper or lower lid, a method of his invention, which he has used in more than 300 cases without reproduction or injury to the normal aspect of the palpebral opening or to the lids. The operation does not require general anesthesia; local anesthesia is sufficient. He instills a few drops of cocain solution over the globe, and injects the same solution under the skin of the lid to be operated on; to the cocain solution he adds adrenalin chlorid. The necessary instruments are: a needle-holder, a bistoury, a pair of scissors to cut the threads of the sutures, which are to be of silk, and introduced by means of a number of curved needles about 3 cm. in length. For a complete entropion he employs six needles; for a partial entropion he uses a number in proportion to the extent of the entropion. After sterilizing the instruments, and making the region and field of operation aseptic, he proceeds to operate in the following manner: 1. The lid is everted in such a way that the limits of the superior border of the tarsal fibrocartilage are easily presented in the field of operation. 2. He inserts the needles into the conjunctiva, at the level of the tarsal superior border; slipping them between the fibrocartilage and the skin, so that they traverse the cellular tissue and orbicular muscle, and come out through the free palpebral border, at the level of the angle of implantation of the lashes. The needles should not be passed entirely through, but should be disposed so as to form a picture like that in Critchett's amputation. The needles should be spaced equidistant, it being advisable to commence by placing the first in the center, in order not to be preoccupied by maintaining the lid everted; then the others are inserted adjoining the center until the angles are reached. 3. He incises the conjunctiva and the tarsal cartilage parallel to the border of the lid, approximately 3 mm. from the free border, from one extreme to the other, if the entropion is complete. In partial entropion the incision must be made in proportion to the deformity, it being preferable, always, to extend the incision beyond the limits of the entropion. The incision is to be made with a bistoury, energetically, until obstructed by the needles, it being evident that a good result depends principally on a good division of the tarsus. 4. He passes all the needles and uses a traction on each of them, so that the deep loops of the thread are adapted to the surface of the conjunctiva. Immediately after the withdrawal of the needles, the lid returns to its former position. The ends of the threads which issue from the palpebral border must be separated so as to obtain five loops, if six needles have been employed. The ends corresponding to each loop should be strongly adjusted to a small roll of gauze. Making the knots in this manner the free border is not damaged, the sutures are not lost in the ulcerated tissues, and consequently there is no difficulty in withdrawing them. The advantage of this suture is due to the fact that the loops are successive without solution of continuity, thus obtaining a number of loops equal to the number of needles employed, less one. The sutures are to be withdrawn in seven or eight days. The palpebral border, from the point of incision, takes a contrary direction; it is directed forward to such a point that if it is desired to exaggerate the effect, it may provoke a slight ectropion. The angle left by the incision forms a wedge which cicatrizes by second intention, filling the tissues with a new growth, and the length of the threads which maintain the corrective incurvation produces cicatricial lines which assist in the definite cure of the entropion.

Annals of Gynecology and Pediatry, Boston.

August.

73 General Considerations on Criminal Abortion. C. G. Cumston, Boston.

St. Louis Courier of Medicine.

August.

74 Baby Incubators on the "Pike." J. Zahorsky, St. Louis.
75 What Are the Interests, Duties, Rights and Privileges of the Medical Profession. F. J. Lutz, St. Louis.
76 What Experience Has Shown. G. Homan, St. Louis.
77 Outline History of Hospital Commission (1895-1899). A. Merrell, St. Louis.
78 System Under which Charity Hospitals Operate in Other Cities. L. S. Luton, St. Louis.

Southern Practitioner, Nashville, Tenn.

August.

79 Perinephritic Abscess. W. A. Bryan, Nashville.
80 Food Adulteration in Tennessee. L. Brown, Nashville.
81 Tuberculosis Cutis. J. M. King, Nashville.

Journal Missouri State Medical Association, St. Louis.

August.

82 Tuberculosis the Problem for the General Practitioner. W. Porter, St. Louis.
83 Recent Advantages in the Etiology and Treatment of Hay-fever. H. W. Loeb, St. Louis.
84 Medical Education. C. M. Jackson, Columbia.
85 Case of Indigenous Tubercular Leprosy. J. Grindon, St. Louis.
86 Importance of Certain Points in the Diagnosis and Surgical Treatment of Appendicitis. J. V. Brown, St. Louis.
87 Method of Radical Relief of Cases of Deafness Long Abandoned as Hopeless; Illustrated by a Case of Nineteen Years Standing. R. Barclay, St. Louis.
88 Practical Suggestion Respecting the Removal of Foreign Bodies from the Larynx; Illustrated by a Case of Cockle-Burr on the Vocal Cords. R. Barclay, St. Louis.

New Orleans Medical and Surgical Journal.

August.

89 Barber Shop in Society. I. Dyer, New Orleans.
90 Cases of Raynaud's Disease and Ainhum. B. A. Colomb, Union, La.
91 Acute Pneumonia and Its Modern Treatment. L. G. LeBeuf, New Orleans.
92 Urine in Gastrointestinal Fermentation. A. C. Eustis, New Orleans.
93 Hemorrhage into Cecum from an Anomalous Appendicular Artery. F. W. Parham, New Orleans.

Albany Medical Annals.

August.

94 Committee on Classification of the Forms of Insanity. J. B. Chapin, H. B. Meredith, D. D. Richardson and G. I. McLeod.
95 Extra-Articular Tuberculosis of the Bones. C. G. Cumston, Boston.
96 Case of Chronic Eczema Involving the Entire Skin Surface. H. W. Carey, Troy, N. Y.

Journal Michigan State Medical Society, Detroit.

August.

97 Past and Present Status of the Medical Profession in Michigan. B. D. Harison, Sault Ste. Marie.
98 Surgery and Human Welfare. F. B. Walker, Detroit.
99 Is Gynecology to Remain a Separate Specialty? R. R. Smith, Grand Rapids.
100 Placenta Prævia. G. W. Nihart, Petoskey.
101 Difficulties in Diagnosis of Syphilis. J. F. Breakey, Ann Arbor.

Buffalo Medical Journal.

August.

102 Submucous Resection of Nasal Septum. J. J. Mooney, Buffalo.
102½ Prognosis of Asthma from a Digestive, Blood, Metabolic, Etiologic Standpoint. G. N. Jack, Buffalo.

Journal of the Association of Military Surgeons of the United States, Carlisle, Pa.

August.

103 Organization and Operation of the Medical Service at the Front in Modern Warfare. P. Imbriaco, Italy.
104 Sanitary Sergeant. O. H. Marion, Boston, Mass.
105 Case of Acute Tetanus Successfully Treated with Antitetanus Serum. H. W. Austin, Public Health and Marine-Hospital Service.
106 Surgical Experience After a Venezuelan Battle. J. C. Pryor, U. S. N.
107 Experiences of a National Guard Regiment in Connection with the Combined Regular Army and National Guard Maneuvers at Manassas. V. Kenerson, Buffalo, N. Y.
108 Medication on the Firing Line. W. F. Waugh, Chicago.
109 Surgeon of the National Guard. R. W. Montelius, Pennsylvania.
110 Use of Motor Wagons in the Medical Service at the Front. H. Mareschal, France.

Journal Mississippi State Medical Association, Vicksburg.

August.

111 Abscess of the Liver.. E. M. Holder, Memphis, Tenn.
112 Phases of Medical Education. P. W. Rowland, Oxford.
113 Cholecystectomy. M. O. Shivers, Greenville.
114 What Are We to Expect from Serum Therapy? J. B. McElroy, Memphis, Tenn.

Denver Medical Times.

August.

115 Physics and Chemistry of Drug Action. E. C. Hill, Denver.
116 Normal Obstetrics, Physiology of the Puerperium. T. M. Burns, Denver.

Kentucky Medical Journal, Louisville.

August.

117 Hemophilia. I. Abell, Louisville.
118 The Doctor as Business Man, or the Business Side of a Doctor's Life. B. A. Caudle, Newstead, Ky.
119 Cyst of the Kidney—a Clinical Case. J. G. Sherrill, Louisville.
120 Extrauterine Pregnancy, Fatty Degeneration of Uterus, Sarcoma of Jaw—Pathologic Report. I. Abell, Louisville.
121 Cesarean Section. L. Frank, Louisville.
122 Pathologic Specimens—Dermoid Sarcoma—Extrauterine Gestation. L. Frank, Louisville.
123 Ophthalmia Neonatorum. H. Wood, Nashville, Tenn.
124 Food Poisoning. W. E. Shepherd, Taylorsville, Ky.
125 Typhoid Fever. J. W. Barnhill, Owensboro, Ky.

Virginia Medical Semi-monthly, Richmond.

August.

126 Treatment of Typhoid Fever. G. F. Jewett, Britton.
127 Stricture. R. C. Bryan, Richmond.
128 Diagnosis and Treatment of Stricture of the Urethra. L. T. Price, Richmond.
129 The Nose. C. M. Burton, Lexington, Va.
130 Matrimonial Aspect of Tuberculosis. A. B. Greiner, Rural Retreat, Va.
131 Surgery of Typhoid Perforation. E. A. Babler, St. Louis.

California Medical and Surgical Reporter, Los Angeles.

August.

132 Certain Types of Association and Habit Neuroses. J. T. Fisher, Los Angeles, Cal.
133 Cystic Degeneration of the Chorionic Villi (Vesicular Mole). T. P. Gerson and A. Fellows, Los Angeles.

FOREIGN.

Titles marked with an asterisk (*) are abstracted below. Clinical lectures, single case reports and trials of new drugs and artificial foods are omitted unless of exceptional general interest.

British Medical Journal.

August 26.

1 Clinical and Bacteriologic Aspects of an Epidemic Simulating Influenza. R. A. Dunn and M. H. Gordon.
2 *Rats in Relation to Plague. B. Skinner.
3 Case of Emmetropia. A. Bronner.
4 *Intraocular Tuberculosis. W. H. Jessop.
5 *Id. K. Hess.
6 *Id. J. Hern.
7 Capsular Complications After Cataract Extraction. E. T. Collins.
8 Filtration of Fluid in the Eye When Under the Influence of Atropin or Eserin. E. E. Henderson.
9 *False Hay Fever. N. B. Harman.
10 Congenital Absence of the Dilator of the Pupil. K. Grossmann.
11 Conical Cornea and Hot-air Cautery. K. Grossmann.
12 Case of Amblyopia Apparently Toxic, Following Influenza. C. E. Shaw.
13 Effect of the Presence of Adenoids and Other Abnormalities in the Nasopharynx on Some Affections of the Eyes. J. Hern.
14 *Evolution in Blepharoplasty. A. H. Benson.
15 New Test for Visual Acuteness. G. A. Berry.

2. **Rats and Plague.**—Skinner discusses the question of whether rats are really the transmitters of plague to man or whether some other animal is responsible for the conveyance of disease. He inclines to the latter view.

4. **Intraocular Tuberculosis.**—Jessop has never seen a case he could prove to be primary intraocular tuberculosis, and doubts the existence of such a condition. He says that excision in intraorbital tuberculous conditions of the eye should seldom be done, unless there is much pain or the condition is telling on the patient's health, because the disease is not primary, and such a procedure would only remove one focus of the disease. He has never seen vitreous opacities in miliary tubercle of the choroid; neither were they present in two cases of chronic choroidal tubercle seen by him. He has had little experience with tuberculin, either as a diagnostic or as a therapeutic agent.

5. **Id.**—Hess employed old tuberculin in eighteen cases and Tr. in eight cases for diagnostic purposes. In thirteen cases there was a general reaction and in two cases a local reaction. Among the cases of iritis, a general reaction was present in more than 50 per cent. It was also present once in

a case of recent choroiditis, and once in a case of keratitis parenchymatosa. He has never observed any ill effect from tuberculin employed therapeutically. In one case of iritis there was an evident improvement after its use.

6. **Id.**—Hern has employed the new tuberculin for diagnostic purposes in many cases. In at least 85 per cent. of the cases there was a general reaction, and in about 50 per cent. there was some local reaction. He considers tuberculin useful as a diagnostic agent, but useless in treatment. He believes that in some cases it was harmful by setting up inflammatory changes in the eye.

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30. **Complete Anesthesia by the Subcutaneous and Stomach Routes.**—Gréhant injected 1 cg. of morphin per kilogram in a dog weighing about fifteen pounds, and in half an hour he poured into its stomach 350 c.c. of 10 per cent. alcohol containing 1.75 c.c. of chloroform. The resulting anesthesia in fifteen minutes was more complete and the dog was more tranquil than he has ever observed in all his experience with experimental anesthesia. In further tests with the same technic on a larger dog he noticed that the rectal temperature dropped several degrees and that the amount of carbonic acid gas exhaled by the lungs was much less than before, which explains the lowering of the temperature. Chloroform dissolves readily in 10 per cent. alcohol; a liter takes up 5 c.c. of chloroform, and this is the solution which he uses. He recommends this technic for man in case of extensive burns and crushing accidents. By injecting a small amount of morphin and giving a little chloroform in diluted alcohol it may prove possible to arrest all the pain without injury to the patient.

31.—See 27 above.

32. **Clinical Examination of Respiratory Interchanges.**—Hitherto investigation of the respiratory interchanges has been confined to the laboratory, but Robin has now invented an apparatus which allows it at the bedside. He gives a number of illustrations of the various parts of the apparatus. It registers the number of inspirations per minute, the volume of maximum expiration or the vital capacity, the pulmonary ventilation or volume of air expired per minute, the amount of carbonic acid and of the various gases produced, combined or absorbed, and the relations between these various factors of the respiratory functions. He has been conducting research with this apparatus on patients with typhoid fever, pleurisy, ascites, diabetes, osteomalacia, dyspepsia, cancer, hemorrhage, tuberculosis and the rheumatic diathesis. Study of the respiratory interchanges further throws light on the effects of drugs and of hydrotherapy and climatotherapy. In typhoid fever the respiratory interchanges are in inverse proportion to the severity of the disease. These findings justify the use of drugs which increase the consumption of oxygen and favor oxidations, and they contraindicate drugs with opposite effects.

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28. **Tuberculous Fibrolipoma of the Knee.**—Couteaud's patient recovered normal use of the joint after extirpation of the growth, which weighed 14 gm. Its tuberculous nature was demonstrated by the microscope and by inoculation of guinea-pigs.

29. **Influence of Intercurrent Diseases on Course of Palate Operations.**—Ehrmann reports three cases in which intercurrent scarlet fever in two and diphtheria in the third did not interfere with the success of the suture. Others have reported serious disturbances from an intercurrent affection. In his patients the first symptoms did not appear until three days or more after the operation and the suture escaped infection in all. He ascribes this fine result partially to his technic of operating in two sittings. His experience now comprises 65 cases in which he operated in this way. By reducing hemorrhage and shock, the child's receptivity is diminished and it is able to resist bacterial invasion better.

30. **Complete Anesthesia by the Subcutaneous and Stomach Routes.**—Gréhant injected 1 cg. of morphin per kilogram in a dog weighing about fifteen pounds, and in half an hour he poured into its stomach 350 c.c. of 10 per cent. alcohol containing 1.75 c.c. of chloroform. The resulting anesthesia in fifteen minutes was more complete and the dog was more tranquil than he has ever observed in all his experience with experimental anesthesia. In further tests with the same technic on a larger dog he noticed that the rectal temperature dropped several degrees and that the amount of carbonic acid gas exhaled by the lungs was much less than before, which explains the lowering of the temperature. Chloroform dissolves readily in 10 per cent. alcohol; a liter takes up 5 c.c. of chloroform, and this is the solution which he uses. He recommends this technic for man in case of extensive burns and crushing accidents. By injecting a small amount of morphin and giving a little chloroform in diluted alcohol it may prove possible to arrest all the pain without injury to the patient.

31.—See 27 above.

32. **Clinical Examination of Respiratory Interchanges.**—Hitherto investigation of the respiratory interchanges has been confined to the laboratory, but Robin has now invented an apparatus which allows it at the bedside. He gives a number of illustrations of the various parts of the apparatus. It registers the number of inspirations per minute, the volume of maximum expiration or the vital capacity, the pulmonary ventilation or volume of air expired per minute, the amount of carbonic acid and of the various gases produced, combined or absorbed, and the relations between these various factors of the respiratory functions. He has been conducting research with this apparatus on patients with typhoid fever, pleurisy, ascites, diabetes, osteomalacia, dyspepsia, cancer, hemorrhage, tuberculosis and the rheumatic diathesis. Study of the respiratory interchanges further throws light on the effects of drugs and of hydrotherapy and climatotherapy. In typhoid fever the respiratory interchanges are in inverse proportion to the severity of the disease. These findings justify the use of drugs which increase the consumption of oxygen and fa oxidations, and they contraindicate drugs with opposite ef

In cases of ascites the respiratory changes are increased, paralleling the amount of ascites. The liver and the lungs have a common function, the elimination of carbon. When one becomes unequal to the task the other vicariously takes it up. After puncture, which relieves the ascites and hence the liver, the latter organ is able to reassume some of this task, and the interchanges in the lungs subside to a lower figure. This conjugate vicarious action of liver and lungs suggests, he thinks, that it might be possible to stimulate the liver functions to increased vicarious action when the lungs are unable to eliminate all the carbon necessary, or *vice versa* to stimulate the lungs to vicarious action when the liver is proving insufficient. Another important point in this connection is that the respiratory chemistry may serve to determine the best moment for tapping ascites. In diabetes the respiratory changes are more intense than in normal conditions. Consequently it can not be considered a disease due to retarded nutrition, but rather the reverse. It requires sedative medication and not measures to stimulate the various chemical activities of the organism. Sedative treatment reduces the respiratory changes as well as the glycosuria. This increased intensity of the respiratory interchanges explains why diabetics are peculiarly exposed to tuberculosis as it prepares the soil for the latter disease. If the respiratory changes remain high in a diabetic, even if the sugar has vanished from the urine, he is not cured and is always in danger of recurrence of the glycosuria. When the respiratory changes drop, especially when not accompanied by a corresponding drop in the sugar in the urine, coma is imminent and measures should be instituted to restore the respiratory functions nearer to normal. Hemorrhage has the effect of increasing the respiratory changes, showing that abstraction of a moderate amount of blood promotes general oxidation. Venesection is, therefore, indicated in affections with retarded nutrition from insufficiency of the nutritive processes, and also in autointoxications and in certain infectious diseases, like pneumonia, when the microbian poisons or those elaborated by the organism in its struggle against the infectious agent or poison, are causing serious damage. Withdrawal of blood accelerates the oxidations and thus aids in neutralizing these poisons, transforming them into soluble non-toxic products, easily eliminated. He has found that the respiratory changes are notably increased in 92 per cent. of all cases of tuberculosis, and during all stages of the disease. This increase in the respiratory changes is one of the manifestations of the "tuberculisable soil," as he calls it. The exaggerated aptitude to consume too much oxygen and to elaborate too much carbonic acid, that is, to consume itself, is the characteristic of the organism predisposed to consumption. The pretuberculous condition is one of exaggerated vitality, not, as generally supposed, one of depressed vitality. This view upsets all our preconceived notions in regard to prevention and treatment of tuberculosis. Instead of tonics we need measures to restrain the organism from burning itself up, and study of the respiratory interchanges reveals the measures suitable for this purpose and the exact doses that produce the finest results. The predisposed should be sorted out and treated the same as we vaccinate, by modifying the vital conditions of the soil. This respiratory syndrome is trasmitted to 60 per cent. of the descendants of tuberculous parents. In the rheumatic diathesis, the respiratory changes are diminished and the type is the reverse of that observed in tuberculosis. It is transmitted to 72 per cent. of the descendants as a rule. Oxygen supplied to the organism in excess does not materially modify the respiratory changes; they seem to depend more on the aptitude of the tissues to fix the oxygen than on the amount supplied.

36. **Pylorectomy for Cancer.**—Poncet has performed pylorectomy with more or less extensive excision of the stomach in 12 cases of cancer and 8 of the patients recovered. The cachexia or extension of the lesion or imperfect technic explain the fatalities. The remote conditions are eminently satisfactory in the patients cured, and justify his advocacy of immediate exploratory laparotomy on suspicion of cancer of the stomach, with more or less extensive gastrectomy as found necessary. Gastrectomy, he states, is not a serious operation when the lesion is in an early stage. The prospects were far from favorable in some of his cases.

37. **Connection Between Albuminuria and Diabetes.**—Lancereaux has observed albuminuria frequently in his cases of gouty, herpetic diabetes, while it was never noted in his 40 cases of pancreatic diabetes. The glycosuria alone does not entail albuminuria. When the latter occurs it may be connected with arteriosclerosis with consequent lesions of kidneys and heart, or it may be of epithelial origin due to some intercurrent affection, tuberculosis in particular. There is a third form, in which the albuminuria alternates with the glycosuria, and like the latter, is subordinate to some nervous disorder. He gives examples of each form, and adds that the physician should examine the condition of the kidneys and nervous system in such a patient, rather than determine the exact proportion of albumin. This will give him a clue both for treatment and for prognosis. There are three groups of circumstances in which this decision is of great value: When parents bring their sons to the consultant with the statement that their physician has told them that the lads are albuminuric and must be put on a milk diet, and that they must stop their college work. Study of the albuminuria and its accompaniments reveal that it is not due to a kidney lesion, and consequently that these precautions are unnecessary. Time shows that the lads develop spontaneously into good health and their albuminuria vanishes. In other cases life insurance is refused to men apparently in good health, under pretext of albuminuria. The kidneys are sound and the insurance company may be prevailed on to reconsider its objections.

Berliner klinische Wochenschrift.

39 (XLII, No. 29, July 17). *Ueber die bakterieide eigenschaft Elischer und J. Kentzler.
40 Erfahrungen mit einer neuen Kassel.
41 *Pathogenese, Symptomatologie und Diagnose der Mündungs-Anomalien einfacher und überzähliger Ureteren beim Weibe. L. Thumin.
42 *Einige neuere diagnostische Forschungsergebnisse auf dem Gebiete der Lungentuberkulose (progress in diagnosis). De la Camp.
43 (No. 30.) *Affections Followed by Cancer.—Ueber Krankheiten, die dem Krebs vorangehen. E. v. Bergmann.
44 Die volare Luxation des Os lunatum carpi und ihre Behand-
45 *Zu puerperalen Peritonitis mit Lap- Kownatzki.
46 *Di auf die Leukocyten. L. Detre [illegible]
47 Aetiologie und spezifische Therapie des Heufiebers (hay fever). Dunbar.
48 *Laryngeal Tuberculosis as Indicatior —Ist die Kehlkopftuberkulose a künstlichen Unterbrechung der sehen? A. Kuttner.
49 *Ueber die Blutserumreaktion der Carcinomatösen. G. Kelling. Id. E. Fuld.
50 Ca Chancre and its Consequences. des weichen Schankers und

39. **Bactericidal Properties of Typhoid Immune Serum.**—The various experiences reported elucidate some of the problems and antagonistic findings of others in the line of bacteriolysis, immunization, etc.

41. **Pathogenesis, Symptomatology and Diagnosis of Deformities in the Ureters in Women.**—Thumin's long article is based on the literature and on experience, especially on a case personally observed in which a supernumerary ureter presented a large cystic enlargement. The supernumerary ureter was located behind the peritoneum, and terminated in a cul-de-sac in the connective tissue. The symptoms of trouble in a ureter were puzzling, as both of the normal ureters could be seen functioning perfectly. Removal of the tumor restored condition to normal in every respect. The symptoms of ureter anomalies are generally disturbances in urination, especially incontinence while the bladder is continent. This occurs only when a persisting Gartner's duct opens into the roof of the vagina. The differentiation is extremely difficult when the ureter terminates in a blind sac. In the case described the nature of the cyst was revealed only by microscopic examination of the walls. The character of the superficial epithelium of the mucous membrane lining the cyst testified to its connection with the urinary apparatus.

42. **Recent Progress in Diagnosis of Tuberculosis.**—De la Camp discusses the value of the more recent diagnostic points in tuberculosis, saying that, on the whole, the old, classical

diagnostic measures are still superior to anything offered in recent years. His experience has been that bacilli can not be detected in even a third of all cases with expectoration. Abnormal auscultation findings are generally associated with abnormal percussion findings. Signs of irritation of the sympathetic, such as differences in the pupils, are important, as also suspicious Roentgen findings, especially in respect to tumefied glands in the mediastinum. About a third of all cases of localized apical tuberculosis present Williams' sign, that is, reduced movability of the affected half of the diaphragm. The anamnesis is of the greatest diagnostic importance, particularly a history of disturbances in the nervous system. The temperature may reveal its pathologic character only when examined directly after physical exercise.

43. **Affections That Precede Carcinoma.**—Bergmann calls attention to the frequency of certain affections in the preceding history of cancer subjects. Among them he cites severe congenital phimosis as a frequent antecedent of large carcinoma of the penis, also large scars resulting from burns. He has personally observed a striking case of this latter combination. A child of 4 fell into an open fire and was burned so that the resulting cicatricial contraction drew the skin of the axilla down to the hip. At the age of 40 a carcinoma developed on the cicatricial tissue, forming the largest cancer which he has ever had occasion to see. He has found a history of Paget's disease of the nipple in only 7 or 8 cases among his 1,000 operative cases of mammary cancer. The carcinoma develops directly from the eczematous alterations in this affection, as also in the acne of workers in paraffin. The latter exhibit usually multiple primary carcinomata. Psoriasis of the tongue and mouth may also be the precursor of a carcinoma. He does not credit a syphilitic etiology to this affection, as the lesion is not at all like those of the tertiary type of syphilis. In a case demonstrated he removed a carcinoma located in the middle of the patches and there has been no recurrence to date after two and a quarter years. He has also observed carcinoma developing on a lupus cicatrix and also from a fibroid lupus lesion. Lesser has reported cases of carcinoma in children of from 12 to 15 years which developed on the basis of xeroderma pigmentosum and was rapidly fatal. Bergmann denies the existence of primary carcinoma on the extremities without a preceding cutaneous lesion, scar, fistula opening, ulcer, eczema, wart or mole. A pigmented nevus leads more often to the production of a melanotic sarcoma than of a carcinoma. The smooth, small, multiple pigmented nevi contain nerve terminals from which minute fibromata are liable to develop, leading possibly to elephantiasis neuromatosa. The warty, dark-colored nevi are liable to be the seat of melanotic carcinoma, as in a case he reports. A small, dark-colored, hairy, raised nevus on the head showed little change for thirty-seven years after birth. Then the nevus began to grow, a bunch developed behind the ear and the enlarged glands of the region can be seen like a string of beads under the skin down to the back of the neck.

45. **Laparotomy and Drainage for Puerperal Peritonitis.**—Kownatzki states that 9 cases of non-encapsulated puerperal peritonitis have been treated at Bumm's clinic at Berlin. Two of the patients were moribund when seen, 2 others were operated on, but succumbed later. In one of the fatal cases pus had already found its way into the pleural cavity. In the other the affection proved to be a number of imperfectly encapsulated single abscesses which it would have been impossible to drain effectually and the development of which had evidently been favored by the opium previously given. It is possible that both these patients might have been saved if operated on sooner. All the other patients were cured by laparotomy and drainage with counter openings. He gives the details of these cases. In 2 there was septic infection; streptococci were numerous in the peritoneal exudate. He knows of no other instance on record of the cure of similar puerperal streptococcus, non-encapsulated peritonitis. The abscess contents were putrid in the 3 other cases. The peritonitis developed very slowly in all, the clinical picture not becoming complete until the seventh to the tenth day after delivery. The general health also was only very gradually impaired and the abdomen was only slightly sensitive to pressure. The difficulty of diagnosing the condition is so great in a woman convalescing from childbirth, that exploratory puncture is justifiable and urgent in dubious cases. The abdomen can be punctured with a small Pravaz needle without fear. Certainty was attained by this means alone in three of his cases. In another a small exploratory incision at the most suspicious point cleared up the diagnosis. A thorough operation is inadvisable, and the main idea is merely to secure the best possible conditions for rubber tube drainage. The incision was made in the inguinal region at the point where inflammatory processes originating in the uterus usually first reach the abdominal wall. The counter-incision was made at the lowest part of the lumbar region, where it merges into the back. There was no swabbing or rinsing, but the parts were thoroughly drained, secretions draining away for several days, as the symptoms subsided.

46. **A New Action of the Cell Nucleus-Phagokaryosis.**—Detre and Sellei found that it is possible to protect animals effectually against sublimate injections by mere subcutaneous injection of an aqueous or serous emulsion of lecithin. In ordinary phagocytosis the cell nucleus takes no part in the process, but with this emulsion of lecithin the nucleus incorporates the grains of the lecithin. It is evidently an active, independent process on the part of the nucleus which seems to have an affinity for the lecithin grains and to absorb them with avidity. They propose the term phagokaryosis for this action on the part of the cell nuclei.

48. **Laryngeal Tuberculosis and Pregnancy.**—Kuttner discusses the question as to interruption of a pregnancy in case of laryngeal tuberculosis. His conclusions are the result of ripe deliberation and council with lawyers as well as with physicians. He first reiterates the statement that diffuse laryngeal tuberculosis during pregnancy has an extremely unfavorable prognosis. The death rate of children whose mothers suffered from laryngeal tuberculosis during the pregnancy is exceptionally high. These facts theoretically justify artificial interruption of the pregnancy, but in practice the measure is permissible only when the conditions indicate that it is the only chance to save the life of the mother and offers some probability of success. Experiences to date have demonstrated that premature delivery in the last months of the pregnancy has little prospect of a favorable outcome. In this stage tracheotomy might still offer some chances.

49. **Blood Serum Reaction of Cancer Subjects.**—Kelling found in certain cases of carcinoma some special precipitins in the serum which displayed characteristic relations to a foreign albumin. He was unable to detect this reaction in case of other affections, and proclaims that its occurrence under reliable technic is a sure sign of some hidden carcinoma, but the absence of the reaction is no evidence that cancer does not exist somewhere. Fuld criticizes his assertions, and states that his control experiments were always negative and that Kelling's communication is not scientifically exact or complete.

Deutsche medicinische Wochenschrift, Berlin and Leipsic.

51 (XXXI, No. 30, July 27.) Die orthopädische Behandlung der Lahmungen (paralyses). A. Hoffa.
52 *Experimentelle Beiträge zur Frage der Desinfektion der Haut (of skin). K. Vogel.
53 *Ueber posttraumatische Psychosen. L. W. Weber.
54 *Ein Behelf für die Pneumatotherapie der Herzkrankheiten [illegible] affections). M. Herz.
55 [illegible] ad ein neues Radiumpräparat (Ra-
56 *[illegible] der Schiffssanatorienfrage (floating
57 (No. 31.) *Report on Epidemic Cerebrospinal Meningitis.—Berichte über die in der Hygienischen Station zu Beuthen O. S. vorgeno[illegible]suchungen bei [illegible]
58 [illegible]
59 *[illegible] from Amniotic Constriction. [illegible]bst Bemer-[illegible]rch intra-[illegible] and Cassirer.
60 *[illegible] Muscles and Joints.—Zur [illegible]nksensibilitätsbestimmung.
61 *[illegible] immunisierendes Heilver-[illegible] mit Perlsuchttuberculin. C. Spengler (Davos).
62 *Zur Diagnose der Influenza und zur Pathogenese ihrer Symptome. A. Köppen.
63 *Ueber die allgemeine Enge des Aortasystems (general narrowing of aorta). F. Apelt.

52. **Disinfection of the Skin.**—Vogel has been using the apparatus for applying superheated air in his experiments in regard to disinfection of the hands. The impetus to the circulation and perspiration in the hot-air bath is a good means to test the depth of the action of the disinfectants. He held his disinfected hand in the hot-air box, and from the number of germs found on it afterward drew conclusions as to the more or less completeness of the preceding disinfection. The germs thus brought to the surface could easily be destroyed. He is convinced that the germs found after this exposure proceed less from the crevices in the skin than from the gland passages. If the surgeon's hand becomes soiled the best way to free it from germs is to hold it in the hot-air box, and thus sweat out all impurities from it. This method of disinfection might also be applied to parts of the body covered with hair, supplementing the physical, mechanical and chemical procedures by this physiologic enhancing of the natural activity of the skin. He suggests that stitch hole suppurations might be avoided by always taking the stitch from within outward, never from without inward, and by always taking a fresh needle for every stitch. His tests of various technics for disinfection showed that the Fürbringer hot water-alcohol-sublimate method is superior to Mikulicz' tincture of soap method in regard to the sterility of the hands, but the latter technic has so many advantages and the results are so good that he still clings to it in preference to the other.

53. **Post-traumatic Psychoses.**—Weber gives a number of examples from his own experience, remarking that there is no *uniform clinical picture for the traumatic psychoses.* A connection may be assumed between the accident and the psychosis when the character changes immediately or soon after the accident, becoming irritable or slightly depressed. Also when an organic brain affection, especially a fulminating paralysis, sets in soon after the trauma. In a functional psychosis an association with the trauma may be surmised when there is depression and anguish, associative and motor inhibitions or catatonic disturbances, in addition to the ordinary characteristic symptoms of the psychosis. To assume a connection with the trauma, the psychosis must have developed soon afterward and have been preceded by a prodromal period of altered psychic behavior.

54. **Breathing Therapy for Heart Affections.**—Herz believes that great benefit can be derived from endo-massage of the heart by expelling the air from the lungs in a series of jerks. This "staccato breathing," as Oertel called it, causes transient increase in the pressure in the thorax and thus acts indirectly on the heart from all around it, not from any one point alone. The participation of the abdominal muscles is superfluous, and for this and other reasons he has invented a little instrument which mechanically produces and controls the staccato expiration. The patient breathes into a tube connected with a wheel and ratchet below, which alternately open and close the outlet to the tube.

56. **Ship Sanatoria.**—Leyden outlines the desiderata for a floating sanatorium, and advocates sea voyages or a sea life in prevention and cure of scrofula, tuberculosis, etc. He advised eighteen lads from very consumptive families to enter the marine service, and only two out of the entire number have ever shown signs of tuberculosis, while their brothers and sisters, who preferred a sedentary life, have paid a very large contingent to the disease.

57. **Epidemic Cerebrospinal Meningitis.**—In this third installment of his official report Lingelsheim states that he succeeded in reproducing the clinical picture of epidemic meningitis in a monkey by instraspinal inoculation of human material.

59. **Injuries from Amniotic Constriction.**—Illustrations are given of two girls, each born with a groove around the arm or leg and paralysis or clubfoot. In one case the peripheral nerves had evidently suffered from the amniotic constriction of the arm just above the elbow, as the child exhibited radial paralysis and there was also partial ulnar paralysis. The cases throw light on the origin of certain cases of clubfoot and of paralysis of isolated peripheral nerves.

60. **Determination of Sensibility of Muscles and Joints.**—Curschmann describes his galvano-muscular technic with which he has been able to detect a reduction in the sensibility in incipient tabes when the findings by all other technics were negative. He determines the minimal "threshold value" of the sensibility, and then requests the patient to note whether a movement of the muscle accompanies the sting when the current is turned on. The patient is almost always able to differentiate the peculiar, brief sensation of movement in the muscles under electric stimulation, and the effect of the movement on the neighboring parts, and also to point out the course of the muscle involved. By this means it is easy to learn the strength of current necessary to induce the sensation of the contraction of the muscle. He gives tables of the findings on normal and diseased subjects and reviews the information to be derived from comparison of them.

61. **New Immunizing Means of Curing Tuberculosis: Bovine Tuberculin.**—Spengler's first announcement in regard to the value of immunization by means of bovine tuberculin was summarized in these columns on page 705 of vol. xliii. He here describes further experiences with his perlsucht tuberculin, its agglutinating properties, an attempt at autoinfection and a differential stain for the bovine tubercle bacillus. The serum of persons under treatment with persulcht tuberculin acquires remarkable agglutinating properties without a trace of a febrile reaction. The very first subcutaneous dose of perlsucht toxin induces agglutination five times as pronounced as with ordinary tuberculin, even when administered intravenously and in the largest dosage. The immunization obtained with the perlsucht tuberculin is a true, natural immunization, while that obtained with human tuberculin is a pseudo-immunization. His research and observation, he claims, have established beyond question the non-identity of human and bovine tubercle bacilli. The improved differentiating stain which he recommends is applied to a dry specimen, warmed, then stained with cold Ziehl's carbol fuchsin for one to five minutes without heating in the flame, but eventually in the incubator, without any acid treatment. The superfluous fuchsin is then rinsed off with 60 per cent. alcohol, after which a small drop of Loeffler methylene blue is added to the alcohol left, which is set on fire and the specimen moved to and fro until entirely covered with the stain. It is then rinsed, dried between blotting paper and then over a flame. The bovine bacilli stain bright arterial red and seem larger, thicker and longer than by any other technic, owing to the absence of any acid treatment. Human bacilli look thin, atrophic and are a bluish, venous red or violet tint. He states further that the bactericidal action of human and bovine tuberculin is different. An infection with living bovine bacilli runs a different course from that with living human bacilli. Spengler made a subcutaneous injection of 0.5 mg. of living perlsucht bacilli in his own arm. An abscess developed without glandular involvement or general disturbance. The ulcer persisted for eight months. The agglutinating properties acquired by his serum were no higher than after injection of killed perlsucht bacilli.

62. **Diagnosis of Influenza.**—Köppen has found constantly the albumin and diazo reactions in the urine as characteristic of influenza. The reaction is probably the result of the action of the toxins.

63. **General Narrowing of Aorta.**—Apelt found this condition as the cause of fatal heart affection in two young athletes. He thinks it was acquired by excessive physical exercise.

Münchener med. Wochenschrift, Munich.

64 (LII, No. 29.) *Uebe [illegible] bei Syphilis. Rille.
65 *Die Spirochäten bei [illegible]
66 *Neue Untersuchunge[illegible] der Syphilis. J. Siegel.
67 *Zum Nachweis der Azetessigsaure im Harn. L. Lindemann.
68 *U[illegible] Harnblase. E. Gierke.
69 *Di[illegible] ostatahypertrophie mit Röntgen- [illegible] and R. Stegmann.
70 Zur [illegible] us Basedowii mit Antithyreoidin Möbius. A. Alexander.
71 *[illegible] Treatment of Acute Suppurations. [illegible] cuter Eiterungen mit Bier'scher [illegible] erlin.
72 [illegible] Cancer Research.—Wege der Sammelforschung über Krebs. K. Kolb.
73 (No. 30.) *Zur Aetiologie der Pneumonia crouposa. H. Schottmüller.
74 *Zur Pathologie des Bindegewebes (connective tissue). K. Vogel.

75 *[illegible] Fatty Tumor in Knee or Foot.—Ueber entzünd- [illegible] und Fussgelenke. Gangele.
76 *[illegible]
77 Head Supp[illegible] Extensionskopfträger. J. Hahn.
78 Weight-bearing Capacity of Floating Bodies as Test of Air in Ther[illegible] er ein [illegible] und [illegible] siche [illegible] Bewe[illegible]
79 "Waki[illegible] Hypnosis.—Ist Wachsugges- tion [illegible]
80 Anesthesia and Operating Table.—Narkose-Wagen, zugleich Vorbereitungs- Verbands- und Operationstisch.

64. **Spirochetes in Syphilis.**—Rille's findings confirm those of others in regard to the almost constant presence of the *Spirochæte pallida* in fresh syphilitic lesions. He gives the particulars of 7 cases in which it was found, and cites the communications of others, and concludes that the sum total of the results certainly points strongly to the specificity of this germ in the etiology of syphilis. He recalls that Donné, discoverer of *Trichomonas vaginalis*, described in 1837 a microorganism in syphilis which he called vibriolineola. He found it in ulcerations on the vagina and penis, and once in a leg ulcer with hospital gangrene.

65. **Id.**—Ploeger states that 100 positive single researches are now on record with only a few negative findings, and more than 50 control researches on non-syphilitic subjects with invariably negative findings.

66. **Etiology of Syphilis.**—Siegel reports that he has succeeded in inoculating rabbits and guinea-pigs with syphilis from human material introduced into the tissues of the ear passages or into a scratch in the iris. He has thus inoculated 50 rabbits with syphilis. He has further inoculated 13 monkeys with the virus obtained from the infected rabbits, with positive results in every instance. The monkeys not only presented the primary, but in time also the secondary lesions of syphilis, as he shows by the illustrations of some of them. Siegel is the discoverer of the *Cytorrhyctes luis* flagellates in syphilitic lesions, for which he has been claiming causal etiologic importance. He found these germs in the lesions of all his animals, and is convinced that their causal connection with syphilis is beyond question as these findings parallel the clinical in every instance.

67. **Determination of Diacetic Acid in Urine.**—Lindemann asserts that the urine must be acid to obtain reliable results in testing for diacetic acid. He has simplified the Riegler test and recommends the following technic: The urine is rendered acid by adding 5 drops of 30 per cent. acetic acid to 10 c.c. of the urine, and then stirring into it 5 drops of Lugol's solution (1 part iodin and 2 parts potassium iodid in 100 parts water). The whole is well shaken and 2 c.c. of chloroform are then poured on top. The layer of chloroform does not change color in case of the presence of diacetic acid, while it turns red with normal urines. The reaction is more sensitive than the ferric chlorid test. When the Gerhardt test was still negative in a mixture of 0.5 c.c. of urine containing diacetic acid with 9.5 c.c. of normal urine, the new test gave the characteristic reaction. The test was always negative with normal urine even after administration of drugs, admixture with bile pigments, alcohol, glycerin, lactic acid and creatinin. The new reaction may be abolished by boiling the urine, and also by long contact with formalin.

68. **Malakoplakia of the Bladder.**—Gierke gives the particulars of 2 cases of this affection of the bladder. He ascribes its etiology to the primary action of a cystitic urine. After the primary lesion of the epithelium, the infiltrating urine degenerates, the cells swell and become impregnated with minerals, resulting in the appearance known as malakoplakia or cystitis in patches. Four out of the 9 cases on record were accompanied by tuberculosis.

69. **Roentgen Treatment of Hypertrophied Prostate.**—Moszkowicz has already reported 3 cases of enlarged prostate treated by application of the Roentgen rays through the rectum. He here continues his reports with 6 new cases. Unmistakable benefit was derived in every instance. The effect was most rapid and pronounced in the cases in which the anuria was of recent occurrence. The gratifying results and the harmlessness of the procedure commend it for extensive application, possibly supplemented by the action of radium in the urethra. In all the cases three sittings of from ten to eighteen minutes each had a pronounced influence on the enlarged organ and on the symptoms. The prostate subsided in size and micturition became more or less normal. In 3 of the cases the patients exhibited symptoms of arteriosclerosis, with indications of angina pectoris.

71. **Treatment of Acute Suppurations with Bier's Passive Hyperemia.**—Derlin relates the history of 2 cases of severe phlegmon of a tendon sheath and one of acute traumatic osteomyelitis of the humerus. All were treated according to Bier's directions by applying a tourniquet to the limb above until a "fiery red edema" had developed. The redder the parts the more violent the inflammation. The beneficial results were remarkable, he reports, and the lesions healed with trifling loss of tissue.

73. **Etiology of Croupous Pneumonia.**—Schottmüller describes a *Streptococcus mucosus* which he found constantly and in pure cultures in his total of 6 cases of croupous pneumonia.

74. **Pathology of the Connective Tissue.**—Vogel tabulates 124 cases of flatfoot, scoliosis, varices, hernias, hemorrhoids, pendulous abdomen, prolapse of uterus, rectum or intestines and emphysema, genu valgum and coxa vara. His tables show that several of these various affections are liable to befall the same individual. His argument is to the effect that they are all manifestations of some congenital anomaly in the connective tissue system. The entire stratum fibrosum is more or less abnormal in such persons, and the physician should examine them for other manifestations of this anomaly when he observes any one of the above affections. Some of the patients cited had six, but three or four was the average.

75. **Inflammatory Lipoma in Knee or Foot.**—Gangele has had occasion to observe several cases of the fat tissue tumors to which Hoffa recently called attention as a frequent consequence of slight trauma or inflammation. They are liable to occur in any joint and to cause severe disturbances. Gangele describes the cases of four patients promptly cured by surgical intervention.

76. **Aspiration Treatment of Purulent Rhinitis.**—Sondermann reiterates his former assertions in regard to the great value of aspiration as a means of treating purulent rhinitis. He has devised an apparatus for the purpose, and he says that it is amazing to see the quantities of purulent secretions which the aspiration removes. In many cases it is evident that some of the secretion must come from the accessory cavities. He has found that the aspiration treatment is equally effective for adults and for children, and that the latter readily learn to use the aspirator themselves. He advises its use four or five times a day in severe cases and morning and night in the mild ones.

Therapie der Gegenwart, Berlin.

Last indexed page 953.

81 (XLVI, No. 7.) *Niels R. Finsens Kra[illegible]nkheit (illness). A. [illegible] Scheel.
82 [illegible] Tisch zur Behandlung der Skoliose (or- [illegible] Müller (Berlin).
83 *Indikationen und Kontraindikationen der Vaporisation des Uterus. K. Baisch. (Döderlein's clinic, Tübingen).
84 (No. 8.) *Zur Kasuistik der Hirn-Punktion (of brain). W. Weintraud.
85 *Febrile Enlargement of Liver in Syphilis.—Zur Frage der fieberhaften luetischen Leberschwellung. H. W. Reye.
86 *Attritin und [illegible] Mendel.
87 Zur [illegible] der Unterschenkelgeschwüre (leg ul[illegible]
88 *Gebrauch von Hals-Pastillen (throat pastilles). W. Zeuner.
89 *Ueber congenitale Pylorus-Stenose. E. Leow.

81. **Finsen's Disease.**—During the entire time of his principal life work Finsen suffered from severe chronic hyperplastic peritonitis with exudation. He studied to keep the ascites under control and took copious notes of the course and details of the disease, which are here reproduced in detail: Born on the Faroe Islands, near Iceland, at 2 years he had meningitis; at 13 pneumonia; at 16 jaundice; at 20 nephritis, and at 21 measles. From childhood he always had a slight blue and cold look, as if half frozen. At 23 the first digestive disturbances appeared, ascribed at first to gastric catarrh, but later

diagnosed as chronic peritonitis. The symptoms and autopsy findings were those of the affection known variously as "iced liver," "pericarditic pseudo-cirrhosis of the liver" or "chronic hyperplastic peritonitis with exudation." The ascites is the chief clinical manifestation, and the chronic peritonitis the predominant pathologic anatomic finding. In a case reported by Rumpf the patient was tapped 301 times, but Finsen required puncture only 18 times, as he kept the ascites under good control. The "iced" aspect involved not only the peritoneum and liver, but also the spleen, and there were evidences of a very old, adhesive calcified pericarditis. He experimented with "dry diet" as a means to reduce the ascites, and found that two or three days after reducing the intake of fluids to 325 or 400 gm. the diuresis increased remarkably and greatly reduced the ascites. Later the diuresis was not so easily influenced as at first and the restriction of fluids had to be still stricter to accomplish the same result. To enhance the diuretic action of the "dry diet" he took purgatives, finding that 7 gm. of calcined magnesia in 100 gm. oatmeal porridge eliminated from 700 to 800 gm. fluid by the intestines while the kidneys excreted about the same amount. Distaste for the magnesia led to substitution of ammonium chlorid or sodium sulphate later. The drug always had to be used in connection with restriction of intake of fluids or the diuresis was insignificant. By these means Finsen was able to keep the ascites under control for several years. He was convinced that he would have been incapacitated for work many times in the course of those years if he had trusted to punctures and ordinary treatment. In 1900 he began to study the influence of salt on his condition, and continued for months his careful research on the metabolism of salt in comparison with other physical findings. His tabulated data are a valuable contribution to the literature on the subject. He found that the largest proportion of salt was eliminated when he was on a salt-free diet. Also that ingestion of a considerable amount of salt seemed to have a depressing influence on his capacity for eliminating it. The high specific gravity of the ascitic fluid and large proportion of albumin indicated that his ascites was an inflammatory exudate and not a mere effusion. There was no compression of the portal vein and no indications of tuberculosis.

83. **Steam Cauterization of Uterus.**—Baisch reviews the present status of vaporization of the uterus, the method of treatment introduced by Sneguireff some years ago and advocated especially by Pinkus. His conclusions are that the method is unreliable, the action sometimes being too profound and again too slight, the thickness of the mucosa being a variable quantity. The success of the procedure depends on chance. The only indication which he accepts for vaporization is the preclimacteric uncomplicated hemorrhage in chronic metro-endometritis. In this condition it may answer the same purpose as the otherwise necessary hysterectomy, and hence may be regarded as a valuable measure in these circumstances. It should never be attempted, however, until after a malignant process has been certainly excluded. Zestocausis is a modified form of vaporization; the steam is kept enclosed in a metal catheter and produces a kind of weak thermocauterization. The literature cited embraces 57 articles.

84. **Puncture of the Brain.**—Weintraud reports 4 cases in which he bored through the skull with an electric drill and punctured through the opening thus made. In the first case a woman of 53 had presented indications of sensory aphasia and facial paralysis. She [illegible]ose, and the skull was drilled and punctured [illegible] and fluid was aspirated. The lesion pr[illegible] tumor at this point. If it had been an abs[illegible] have had a direct therapeutic effect. In [illegible] woman had attacks of vomiting, finally [illegible] choked disc. The right lateral v[illegible] times and the headache was alwa[illegible] tarded pulse returned to its forme[illegible] the choked disc did not retrogress. [illegible] did not seem to be very high in this [illegible] puncture was remarkable. The fi[illegible] brain substance must be already injure[illegible] when signs of compression of the brain [illegible] another case puncture of the lateral ventricle for symptoms of a brain tumor failed to relieve. Not a drop of fluid could be aspirated and nothing was found postmortem to explain the symptoms. Weintraud thinks that the affection responsible for the symptoms must have been a swelling of the brain, and that negative puncture in such a case should be accepted as an important aid in the diagnosis of this condition. He urges more general adoption of exploratory drilling and puncture, confident that in many cases it may bring relief and even cure. The latter might readily occur in case of a solitary tubercle already in retrogression but becoming dangerous by the accompanying internal hydrocephalus.

85. **Febrile Affection of Liver in a Syphilitic.**—The possibility of an isolated febrile syphilitic enlargement of the liver has been discussed considerably in the last few months. Reye here describes a case in which the symptoms suggested abscess formation in the liver in a syphilitic, but they all vanished under specific mixed treatment. The patient had been infected with syphilis eight or nine years previously.

86. **Intravenous Medication.**—Mendel is convinced that the intravenous route is free from danger for the patient and that with correct technic and appropriate drugs, it is destined to prove an important factor in the renaissance of pharmacodynamic therapy. His experience with the salicylates and thiosinamin administered intravenously has been extremely favorable.

88. **Disinfection of the Tonsils.**—Zeuner recommends pastilles made of guaiac flavored with some aromatic substance, to be used as a disinfectant and in treatment of the tonsils. Whenever there are any indications of sore throat one of these pastilles slowly dissolved in the mouth will be found very useful to avert further trouble and to cure the pathologic tendency of the tonsils.

89. **Congenital Stenosis of the Pylorus.**—Loew relates a case of this condition in which remarkable improvement followed the administration of a tablespoonful of an alkaline mineral water after eating. This [illegible]y neutralized the hyperacid secretions and thus abo[illegible] condition causing the reflex stenosis.

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Acknowledgment of all books received will be made in this column and this will be deemed by us a full equivalent to those sending them. A selection from these volumes will be made for review, as dictated by their merits, or in the interests of our readers.

Manual of Organic Materia Medica and Pharmacognosy. An Introduction to the Study of the Vegetable Kingdom and the Vegetable and Animal Dru[illegible]otanical and Physical Characteristics, Sourc[illegible]macopeial Preparations, Insects Injurious to [illegible] Botany. By L. E. Sayre, B. S., Ph.M. Thir[illegible]with Histology and Microtechnic by W. C. Stevens. Cloth. Pp. 692. Price, $5.00 net. Philadelphia: P. Blakiston's Son & Co., 1905.

Department of the Interior Bureau of Government Laboratories. I. Birds from the Islands of Romblon, Sibuyan, and Cresta De Gallo. II. Further Notes on Birds from Ticao, Cuyo, Culion, Calayan, Lubang and Luzon. By R. C. McGregor. Paper. Pp. 34, with 10 Illustrations. Manila: Bureau of Public Printing, 1905.

[illegible] Interior Bureau of [illegible] New Buildings. b[illegible] e Library, M. Poli[illegible] Manila: Bureau [illegible]

Exercises in Practical Physiology. By A. D. Waller, M.D., F.R.S. Part II. Exercises and Demonstrations in Chemical and Physical Physiology. By A. D. Waller and W. L. Symes. Paper. Pp. 79. Price, 90c. New York: Longmans, Green & Co., 1905.

Third Annual Report of the Superintendent of the Bureau [illegible], for the Period from September 1, 1903 [illegible] Pp. 105. Manila: Bureau of Public Printing, 1905.

Proceedings of the American Medico-Psychological Association. At the Sixtieth Annual Meeting held in St. Louis, Mo., May 30-June 3, 1904. Cloth. Pp. 470. Pub. by the Association, 1904.

Diseases of the Anus and Rectum. By D. H. Goodsall, F.R.C.S. and W. E. Miles, F.R.C.S. Part II. Cloth. Pp. 271. Price, $2.00. New York: Longmans, Green & Co., 1905.

Annual Report of the Essex County Hospitals for the Insane. For the Year Ending April 30, 1905. Paper. Pp. 67. New *Jersey: Groebe-McGovern Co., 1905.*

Proceedings of the Pathological Society of Philadelphia. New Series. Vol. viii, No. 3 1905. Paper. Published by the Society. 1905.